THE ARAB REPUBLIC OF EGYPT

ANNUAL METEOROLOGICAL REPORT

1971

THE EGYPTIAN METEOROLOGICAL AUTHORITY

CAIRO

National Oceanic and Atmospheric Administration

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PUBLICATIONS OF THE METEOROLOGICAL AUTHORITY OF THE ARAB REPUBLIC OF EGYPT — CAIRO

In fulfilment of its duties, the Egyptian Meteorological Authority issues serveral reports and publications on weather, climate and agro-meteorology. The principal publications are described on this page.

Orders for publications should be addressed to :
"Chairman of the Board of Directors, Meteorological Authority, Kubri-el-Qubbeh — CAIRO".

THE MONTHLY WEATHER REPORT

First issued in 1909, the Monthly Weather Report served to give a brief summary of the weather conditions that prevailed over Egypt during the month, with a table showing the mean values for few meteorological elements and their deviations from the normal values. From 1954 to 1957 this report was in a rapid state of development and extension resulting into a voluminous report on January 1958 giving surface, upper air, and agro-meteorological data for Egypt.

As from January 1964, the Monthly Weather Report was pressed to give climatological data for a representative selection of synoptic stations.

THE AGRO-METEOROLOGICAL ABRIDGED MONTHLY REPORT

Gives a review of weather experienced in the agro-meteorological stations of Egypt as well as monthly values of certain elements.

THE ANNUAL REPORT

This report gives annual values and statistics for the various meteorological elements, together with a summary of the weather conditions that prevailed during all months of the year.

CLIMATOLOGICAL NORMALS FOR EGYPT

A voluminous edition was issued in March 1968 which brings normals and mean values up till 1960.

METEOROLOGICAL RESEARCH BULLETIN

First issued in January 1969 on a bi-annual basis. It includes research works carried out by members of staff of "The Meteorological Institute for Research and Training" and the Operational Divisions of the Meteorological Authority.

TECHNICAL NOTES

As from October 1970, the Meteorological Authority started to issue a new series of publications in the form of Technical Notes (non periodical) on subjects related to studies and applications of meteorology in different fields for the benefit of personnel working in these fields.

CONTENTS

FOREWORD

The "Annual Meteorological Report" for Egypt was issued regularly since the year 1900 by the Survey Department at Cairo. The Annual report of the year 1900 contained the daily, monthly and annual values of different meteorological elements at Abbasiya (Cairo) and other few climatological stations in Egypt and Sudan.

With the closing of Abbasiya Observatory as the Principal Meteorological Station in the year 1904 and replacing it by Helwan Observatory, it had been decided starting from the Annual Meteorological Report of 1904 to separate the Annual Meteorological Report into two independent parts, the first of which was dealing with the whole work of Helwan Observatory, while the second part included the daily, monthly and annual values of different meteorological elements at selected climatological and rainfall stations together with the River data.

Starting from the issue of 1941 the Annual Meteorological Report contained no more "daily values" but only monthly and annual values.

As from the issue of 1958 the Annual Meteorological Report took a new form. It started with a general annual review of weather together with twelve monthly summaries of weather conditions in Egypt. In addition, it included a new set of tables giving more detailed surface and upper air climatological data for selected stations. The annual review of Agro-Meteorological Station at Giza ; the monthly and the annual values of routine observations made at the fields of the station were also included in the Annual Report. This annual review gave a brief summary of the characteristic features of the different meteorological and micro meteorological elements of the year ; more weight was given in this review to elements which are of interest to agriculturists. Moreover, the Annual Meteorological Report specified the different climatic districts in Egypt. It also contained explanatory notes about methods of observations of different meteorological elements ; instruments used in these observations, their exposure and methods of deriving daily, monthly and annual mean values and frequencies of different elements.

As from 1960 tables appearing in the Annual Meteorological Report have been totally revised and some new tables have been introduced to include more detailed climatological data.

As from 1964, the Annual Meteorological Report was again totally revised. The number of meteorological stations appearing in the Report have been concentrated in the main synoptic stations working mostly continuously 24 hours. In addition, climatological data included in the Report will be confined to the annual mean values, annual totals, anual frequencies and annual absolute values. More specific climatological data have to be requested from the Meteorological Authority.

Cairo, March 1973

Chairman (M. F. TAHA)

Board of Directors

INTRODUCTION AND EXPLANATION OF THE TABLES

For the purpose of this Annual Meteorological Report, the Arab Republic of Egypt is divided into six climatic districts as follows:

Number	District	Number	District
I	Mediterranean Area	IV	Upper Egypt
II	Lower Egypt	V	Western Desert
III	Cairo Area	VI	Red Sea Area

The data included in Tables A1, A2, A3, A4 and A5, are based on surface observations made at a representative selection of the basic network of synoptic stations. The data included in Tables B1,B2, B3 refer to Upper Air Observations The data included in Tables C1, C2, C3, C4 & C5, are based on observaions taken at the Agro-Meteorological stations at M. Matruh, Tahrir, Bahtim and Kharga. The observation fields at Tahrir, M. Matruh, Bahtim and Kharga are considered for the moment as dry and bare fields. At Kharga Oasis, the observation field is of the size of about 4000—6000 square metres.

The soil characteristics of these fields are :

	M. MATRUH	TAHRIR	BAHTIM	KHARGA
Top soil type . .	Not available at present	Pure sand	Not available at present	Sandy loam granular Not-compact
Top soil depth .	,,	More than 3 metres	,,	20 cms.
Sub soil type . .	,,	Pure sand	,,	Platy clay non-compact
Slope of ground and its direction. .	,,	½% towards East & North	,,	Flat (0–0.3%)
Level of Water table	,,	More than 5 metres	,,	More than 5 Metres

Except for the wind speed which is expressed in knots, the metric units are used throughout this report and are as follows:

— The atmospheric pressure is expressed in millibars (one millibar = 1000 dynes per square centimetre = The pressure due to 0.7501 millimetre of mercury at 0°C at latitude 45°).

— Air and soil temperatures in degrees celsius (°C),

— Relative humidity (%),

— Rainfall in millimetres,

— Snow depth in centimetres,

— Duration of bright sunshine in hours,

— Sky cover in octas,

— Evaporation in millimetres,

— Altitude of pressure surface in geopotential metres,

— Mean wind speed of the whole day, and of the day-time and the night-time intervals in metres per second,

— (Solar+Sky) radiation in gram-calories per centimetre square,

— Vapour Pressure in millimetres.

EXPLANATORY NOTES ON TABLES

SURFACE DATA

TABLE A 1.—Annual mean daily values of the Atmospheric Pressure, Air Temperature, Relative Humidity, Piche Evaporation and Total Bright Sunshine Duration.

This table gives the following data :

— The annual mean daily values of the M.S.L. Pressure and their deviations from the corresponding normal values.

— The annual mean values of maximum air temperature (A), minimum air temperature (B) and $\frac{A+B}{2}$ and their deviations from their corresponding normal values.

— The annual mean daily values of dry bulb temperature, wet bulb temperature and relative humidity and their deviations from their corresponding normal values.

— The total actual and the total possible durations of bright sunshine during the year; the percentage of the total actual with respect to the possible duration.

— The annual mean daily values of Piche Evaporation.

The annual mean daily values of the atmospheric pressure, air temperature, relative humidity & Piche evaporation are the arithmetic means of the corresponding monthly mean daily values during the year.

The monthly mean daily value of the atmospheric pressure corrected to Mean Sea Level (M.S.L.) is the arithmetic mean over the month of the corresponding daily hourly values or of the daily observations taken at the 8 synoptic hours (00, 03, 06, 09, 12, 15, 18 & 21 U.T.). The atmospheric pressure is measured by mercury barometers installed indoors. The M.S.L. Pressure is the barometer reading corrected for the height of the barometer cistern above or below the Mean Sea Level at the station. Corrections for index, temperature and latitude have been applied to the barometer readings before reduction to M.S.L. In case of stations which do not take some of these synoptic observations, the pressure for these hours is computed from the records of barographs placed indoors at the stations.

The monthly mean values of the maximum (A) and of the minimum (B) air temperatures are the arithmetic means of their corresponding daily values over the month. The maximum (mercury) and the minimum (alcohol) thermometers are freely exposed in the louvred screens with their bulbs at a height of 160 to 170 centimetres above the ground.

The monthly mean values of $\frac{A+B}{2}$, are computed from their corresponding daily calculated values over the month.

The monthly mean daily values of the dry and of the wet bulb air temperatures are the arithmetic means over the month of their corresponding daily hourly values or of their corresponding values at the 8 synoptic hours (00, 03, 06, 09, 12, 15, 18 & 21 U.T). The dry and wet bulb thermometers used are of the mercury type and freely exposed in sloping double roofed louvred screens with their bulbs at a height 140—150 centimetres above the ground. In case of stations which do not take observations at some synoptic hours, values of the dry and wet bulb temperature for these synoptic hours are extraced from the records of recording dry & wet thermographs placed in the louvred screens at the stations.

The monthly mean daily values of the relative humidity are derived from the mean daily values during the month of the dry and wet bulb air temperatures using Jelinek's Psychrometer-Taflen (Leibzig 1911). The mean daily values of the dry and wet bulb air temperatures are derived as in the last paragraph.

The monthly mean daily values of Piche evaporation are the arithmetic means over the month of its daily values. Evaporation measurements are taken once daily at 0600 U.T. and give the evaporation for the previous 24 hours. The evaporation readings are measured by a Piche tube freely exposed in sloping double roofed louvred screens, the evaporation disc has an effective area of 10.1 centimetre square, white in colour and at a height of 140—150 centimetres above the ground.

The annual values of the actual duration and of the possible duration of bright sunshine are the sum of their corresponding monthly values during the year and the monthly values are the sum of the corresponding daily values. In calculating the possible duration of sunshine for a given day, the period of cut off for that day caused by obstacles such as mountains, are climinated from the possible duration with an ideal flat horizon. In case of stations where the record of a day or more is missing, the total actual duration is given between brackets and a note is added at the end of the table giving the actual number of records (days) used in summing up this total actual. In such cases the coresponding total possible duration is also gien in bracket and it is the sum of the annual possible duration of the days of the available records. The duration of bright sunshine is measured by the Campbell-Stockes sunshine recorders which are suitablly exposed.

TABLE A 2.—Maximum and Minimum Air Temperatures.

This table gives the following data :

—The extreme values of the maximum and of the minimum air temperatures observed during the year and their dates of occurrences.

—The number of days during the year with maximum air temperatures above and with minimum air temperatures below, specified limits.

—The annual mean daily values of the grass minimum air temperatures and their deviations from the corresponding normal values.

Higher and lower limits of both maximum and minimum air temperatures during the year and their corresponding dates of occurrences are extracted from the daily readings of maximum (mercury) and minimum (alcohol) thermometers. These dates are included for actual occurrences up to three (last three dates) ; when exceeding three, the symbol * is added beside the last three dates.

The number of days during the year with maximum air temperatures above 25°C, 30°C, 35°C, 40°C & 45°C and with minimum air temperatures below 10°C, 5°C, 0°C & — 5°C are included also in this table under separate columns.

The types and exposure of the maximum and of the minimum thermometers are as indicated in notes on table A 1.

The annual mean values of grass minimum temperatures are the arithmetic means over the year of the corresponding monthly mean values. The monthly mean values are the arithmetic means over the month of their corresponding daily values. The grass minimum temperature is measured by an ordinary minimum (alcohol) thermometer suitably exposed in the open air at the station field on a special stand with its bulb at a height of 5 centimetres above ground just touching the grass tops if there is any. Grass minimum thermometer readings are taken daily on a routine base at 0600 U.T.

TABLE A 3.—Sky Cover and Rainfall.

This table gives the following data :

— The annual mean values of the total sky cover at the principal synoptic hours of observations and of the daily total sky cover.

— The total amount of rainfall during the year and its deviation from the corresponding normal value.

— The maximum amount of rainfall in one day and its date of occurrence.

— The number of days with amounts of rainfall reaching or exceeding specified limits.

The annual mean values of the total sky cover at the principal synoptic hours (00,06, 12 & 18 U.T.) and of the daily total sky cover are the arithmetic means over the year of the corresponding monthly mean values. The monthly mean values of the total sky cover at the principal hours are computed from their corresponding daily routine values observed during the month. The monthly mean values of the daily total sky cover are the arithmetic means over the month of the daily hourly values or of the daily observations taken at the 8 synoptic hours (00, 03, 06, 09, 12, 15, 18 & 21 U.T.). Sky cover is in octas.

The total annual rainfall is the sum of the total monthly rainfall during the year. The total monthly rainfall is the sum of the daily rainfall during the month. The maximum daily rainfall and the number of days with rain $<$ 0.1 and equal or more than 0.1, 1, 5, 10, 25 & 50 mms. are extracted from the routine daily rainfall totals during the year. The rainfall for a given day is the amount of rain which has fallen during the 24 hours commencing at 0600 U.T. of that day ; when the amount of rain which has fallen is not large enough to be measured (less than 0.1 mm.) the term "Trace" is entered as (Tr.). The amount of rainfall measured includes the water equivalent of the rain water which has frozen after falling and the water equivalent of solid precipitation such as hail if any. Dates of maximum rain in 24 hours are included for actual occurrences up to three (last three dates) ; when exceeding three, the symbol * is added besides the last three dates.

The amount of rainfall is normally measured by ordinary rain gauges. Some selected stations are also equipped with a recording type of rain gauge. The rim of both types of rain gauges are at a height of 90—100 cms above the ground.

TABLE A 4.—Annual Frequency of Occurrence of Miscellaneous Weather Phenomena.

This table gives the annual number of days of occurrence of rain, snow, ice pellets, hail, frost, thunderstorm, mist, fog, haze, thick haze, dust or sandrising, dust or sandstorm, gale, clear sky & cloudy sky. Except for rain (see notes on table A 3) the days of occurrence of these weather phenomena are those days during which the phenomenon has occurred at any time between 2200 and 2200 U.T. for stations working 24 hours, but for stations working less, this table gives the annual frequency of occurrence of these phenomena during hours of observations only.

In compiling this table, the terminology and definitions of these different weather phenomena are as follows.

— A day of rain is the day during which the total amount of rainfall is 0.1 millimetre or more.

— A day of snow is the day druing which snow or snow flakes or snow showers is or are observed even if it is or (they are) so small in quantity as to yield no measurable amounts of precipitation in the rain-gauge.

— A day of ice pellets is the day during which ice pellets are observed even if they are so small in quantity as to yield no measurable amounts of precipitation in the rain-gauge.

— A day of hail is the day during which either one or more of the following types of precipitation is or are observed even if they are so small in quantity as to yield no measurable precipitation in the rain-gauge :

— Soft hail

— Small hail

— Hail stone

— A day of frost is the day during which frost is observed at the station.

— A day of thunderstorm is the day during which thunder is heard at the station whether lightning is seen or not. A day on which lightning is seen but thunder is not heard at the station is not counted as a day of thunderstorm.

— A day of mist is the day during which the surface horizontal visibility at the station has deteriorated and became equal to or greater than 1000 metres due to mist.

— A day of fog is the day during which the surface horizontal visibility at the station has deteriorated and fell below 1000 metres due to fog.

— A day of haze is the day during which the horizontal visibility at the station has deteriorated and became equal to or greater than 1000 metres due to haze.

— A day of thick haze is the day during which the horizontal visibility at the station has deteriorated and fell below 1000 metres due to thick haze.

— A day of dust or sandrising is the day during which the horizontal visibility at the station has deteriorated and became equal to or greater than 1000 metres due to dust or sandrising.

— A day of dust or sandstorm is the day during which the horizontal visibility at the station has deteriorated and fell below 1000 metres dueto dust or sandstorms.

— A day of gale is the day during which the mean surface wind speed reached or exceeded 34 knots at the station for at least 10 minutes.

— A day of clear sky is the day on which the mean cloud amount at the station is less than 2/8.

— A day of cloudy sky is the day on which the mean cloud amount at the station is 6/8 or more.

As regards the last two items above, the mean cloud amount for a day is the mean of the 24 hours, the 8 synoptic hours or the 4 main synoptic hours of cloud observations according to the number of the routine observations taken at the station.

TABLE A 5.—Annual number in hours of occurrences of concurrent surface wind speed and direction recorded within specified ranges.

This table gives the annual number in hours of the following :

— Calm winds.

— Variable winds.

— unrecorded winds,

— simultaneous occurrences of surface wind satisfying the specified ranges of speed and direction.

— surface wind blowing from specified ranges of direction irrespective of their speed,

— surface wind satisfying specified ranges of speed irrespective of their direction.

The annual numbers in hours of all elements included in this table are the sum of the corresponding monthly values during the year.

The elements used in preparing this table are the mean hourly values of the surface wind speed and the corresponding mean hourly values of direction taken from the daily records of the surface wind instruments intsalled at the station. These mean hourly values are extracted for every hour of each day of the year and they refer to a period of 60 minutes centred at the hour.

The number in hours of occurrences of the surface wind falling within the ranges of speed and direction indicated in the table is the number of cases when the mean hourly values of the surface wind as defined have satisfied these ranges.

The number in hours of "variable" winds is the number of cases when the surface wind showed no definite direction over the period of the 60 minutes centred at the hour or when the wind vane was sticking over that period due to the lightness of the wind and not responding to the variation in wind direction ; in such cases the mean wind speed over this period is normally less than 5 knots. The number in hours of "calm" winds is the number of cases where the surface wind has a mean speed of less than one knot over that period, whatever the mean wind direction over the same period is. The number in hours during which the recording instrument failed to record over the whole year is given under a separate column.

The instruments used for recording the surface wind are of the Dines Pressure Tube Anemograph.

This table follows the general lines of Model B of chapter 12 part IV of the WMO Technical Regulations 1959. The ranges of wind speed are (1-10), (11-27), (28-47) knots and 48 knots or more ; the ranges for wind direction are twelve ranges of 30° each, beginning with the range (345°-014°) as being the true north.

UPPER AIR DATA

TABLE B 1.—Annual climatological data of pressure, temperature and dew point at the surface of the station, the standard and the selected pressure surfaces.

The routine upper air observations are taken at 0000 & 1200 UT, a separate table of this type is prepared for each hour.

This table follows the general lines recommended by the Commission for Climatology of the World Meleorological Organisation Rec. 34 (CCL-1), it gives the following data for the hour of observation indicated at the table :

— The number of cases (N) the height of each of the pressure surfaces indicated in the table has been attained during the year, and the number of cases the temperature and dew point at these pressure surfaces have been observed.

— The annual mean values of the atmospheric pressure corrected to the ground level of the station and its highest and lowest values during the year.

— The annual mean values of air temperature at the surface, the highest and lowest values.

— The annual mean values of dew point at the surface.

— The annual mean, the highest and the lowest values of the altitude of each of the pressure surfaces.

— The annual mean, the highest and the lowest values of air temperature at each of the pressure surfaces.

— The annual mean value of dew point at each of the pressure surfaces.

Mean annual values are computed as the arithmetic mean of the twelve monthly mean values.

The monthly mean values are computed as the arithmetic mean of all daily values. Whenever, it is not possible to obtain a complete set of daily values, a useful monthly mean value may be obtained as the mean of available values, taking in consideration ; (a) number of missing observations not more than 10, and (b) there in no continuous period of 5 days without an assigned value.

The instruments used are of the radiosonde modulating frequency recording type ; no corrections for radiation are applied.

The altitudes are given in geopotential metres above mean sea level, temperatures and dew points in degrees celsius.(°C).

TABLE B 2.—Annaul mean and extreme values of the freezing level and the first tropopause ; the highest wind speed in the upper air.

The routine upper air observations are taken at 0000 & 1200 U.T. This table is based on wind observations taken by the SCR — 658 or the Metox radiotheodolites working simultaneously with the radiosonde observations. The types of radiosonde instruments used are given in notes to table B_1.

This table gives the following data for each hour of observation :

— The annual mean values of the altitude, pressure and dew point of the freezing level together with the number of observations (N) taken during the year for each element ; the altitudes and months of occurrence, pressures and dew points of the highest and lowest freezing levels observed during the year.

— The annual mean values of altitude, pressure and temperature of the first tropopause together with the number of observations taken during the year for each element, the altitudes and months of occurrences, pressures and temperatures of the highest and lowest first tropopauses observed during the year.

— The direction and speed of the highest wind speed, the altitude, month of occurrence and pressure at which this speed is observed.

The annual mean values of the altitudes of the freezing level and of the first tropopause, and the annual mean values of the pressure and of the dew point or temperature at each of these levels are the arithmetic means of the corresponding monthly mean values, and the monthly mean values are the arithmetic means of the corresponding daily values. The first tropopause is determined in accordance with the definition adopted by the Executive Committee of the World Meteorological Organization Resolution 21 (EC-IX).

Altitudes are given in geopotential metres above mean sea level, temperatures and dew points in degrees celsius, wind direction in degrees east of the true north on the scale (000-360°) and wind speed in Knots.

Table B 3 — **Annual Frequency of Occurrences of Wind Direction within Specified Ranges and The Mean Scalar Wind Speed at The Surface of The Station, The Standard and Selected Pressure Surfaces.**

The routine upper air observations are taken at 0000 and 1200 U.T. A separate table of this type is used for each station.

This table, as in the case of table B 1, follows the genral lines recommended by the Commission for Climatology of the World Meteorological Organisation Rec 34 (CCL-1) ; the ranges of wind direction used are twelve ranges of 30° each beginning with the range (345° — 014°) as being the true north. This table gives for each hour of observation the following data of wind analysis at the surface, standard pressure surfaces and a number of selected pressure surfaces.

— The number of cases (N) the wind has been observed from the specified ranges of direction.

— The mean scalar speeds (ffm) of winds blowing from the specified ranges of wind direction.

— The number of cases of calm winds.

— The total number of cases (TN)the wind has been observed during the year.

— The mean scalar speeds of winds blowing from all directions.

The mean scalar wind speed(ffm) of winds blowing from each range of direction at a given pressure surface is the arithmetic mean of the ocrresponding monthly mean values of wind speeds and the monthly mean values are tne arithmetic means of the corresponding daily values. The term "Calm" is used to denote wind speed of less than one knot.

AGRO-METEOROLOGICAL DATA

Annual Review of Agro-Meteorological Stations.

The annual review includes abridged and summarized report on the characteristic features of the different meteorological and micro-meteorological elements. More weight is given in this review to those elements which are of interest to agriculturists.

TABLE C 1.—**Annual Mean Air Temperature at 1½ metres above Ground**

This table gives the following data :

— The annual mean values of the maximum and of the minimum air temperatures.

— Tha annual mean values of the day, the night time and the day time of air temperatures.

— The annual mean values of the duration of air temperatures above specified values.

The annual mean values of the maximum, minimum, night-time mean, day-time mean and mean of day of air temperatures are the arithmetic mean of the corresponding monthly mean values. The monthly mean values of these elements are the arithmetic mean of the corresponding mean daily values.

The mean air temperature of a day is the mean of the eight values of the dry bulb temperature occurring at each of the principal and secondary observation hours, the value at 0000, 0300 & 2100 U.T. being extracted from the record of the dry bulb thermometer of a mercury in steel hygrograph, except at M. Matruh and Kharga where they are obtained from visual readings.

The night-time mean temperature of a day is the mean temperature for the period from sunset of the previous day to sunrise of the same day. The day-time mean temperature refers to the period from sunrise to sunset of the same day. Both night-time and day-time mean temperatures are computed from empirical formulae, which may vary from month to month but are common for all centres. Tnese formulae were found by trial comparison with true means of the year 1966. The errors were never permitted to reach a whole degree, and usually stayed equal to or lower than 0.5°C.

The duration of air temperatures above a specified limit of temperature is obtained graphically from the temperature recording charts, daily to the nearest whole hour.

The maximum (mercury), the minimum (alcohol) and the dry bulb (mercury ventilated) thermometers are freely exposed in louvred Stevenson screens of the Egyptian type with their bulbs at a height of 190 - 195 centimetres above ground for the maximum and minimum thermometers, and 170 cms approximately for the dry bulb thermometer ; the recording thermometer used is of the bi-metallic type and is exposed in a similar screen ; the height of the bi-metallic piece is 165 centimetres approximetely above the ground.

TABLE C 2.—Annual Extreme values of Maximum and Minimun air temperatures at 1½ metres above ground, Absolute Minimum air temperature at 5 cms. above ground in different fields.

The extreme values (highest and lowest) of maximum and minimum air temperatures at 1½meters above ground, and the absoulte values (lowest) of minimum air temperatures at 5 cms. above ground in dry fields are extracted from their corresponding daily routine values. Dates of occurrences are included in separate columns beside the corresponding extreme vaules.

The thermometers used for minimum air temperature at 5 cm. above ground are of the ordinary minimum type (alcohol) with the bulbs screened with small separate screens of horizontal 5 cm. length and 2 cm. diameter metal tubing painted white ouside and black inside, and centered on the thermometer bulbs.

TABLE C 3.—Annual values of (Solar + sky) Radaition, Duration of bright sunshine, Relative humidity, Vapour pressure at 1½ metres above ground, Evaporation and Rainfall.

This table gives the following data :

— The annual mean values of the (solar + sky) radiation.

— The annual total actual and total possible durations of bright sunshine, the percentage of the total actual with respect to the total possible duration.

— The annual mean of the day of relative humidity, the mean of relative humidity at 1200 U.T. and the lowest value of relative humidity during the year.

— The annual mean of the day of vapour pressure and the vapour pressure at 1200 U.T., the highest and lowest values of vapour pressure during the year.

— The annual mean values of the evaporation taken by the Piche tube and by class "A" evaporation pan.

— The annual total rainfall, and the maximum rainfall in one day during the year.

The annual mean value of the (solar+sky) radiation is the arithmetic mean of the monthly mean values. The monthly mean value is the arithmetic mean of the daily values. The (solar+sky) radiation is obtained, daily from the records of a Robitzsch actinograph ; the Robitzshc values at Bahtim and Tahrir are regularly compared with the records of an Eppley pyrheliometer. The sensitive elements of the Robitzsch actinograph and of the Eppley pyrheliometer are at 100 cms. proximately above the ground.

The annual value of the total actual and total possible duration of bright sunshine is the sum of the corresponding daily values during the year. The types of instruments used for the measurement of the duration of bright sunshine, their exposure and the caluclation of the total possible duration values are as given in notes on table A1.

The annual mean relative humidity of the day and at 1200 U.T., mean vapour pressure of the day and at 1200 U.T. and mean evaporation are the arithmetic mean of the corresponding monthly mean values.

The relative humidity and vapour pressure values at a certian hour are derived from the readings of ventilated dry and wet bulb mercury thermometers freely exposed in the screen using the Aspirations Psychrometer Tafeln of the Deutschen Wetterdienst 1955. The height of the bulbs is 170 cms approximately above the ground.

The mean relative humidity or vapour pressure for a given day is obtained from the eight principal and secondary observation values which are extracted from the readings of the dry and wet bulb thermometers, the values at 0000, 0300, and 2100 U.T. being extracted from the records of the mercury in steel hygrograph except at Kharga and M. Matruh where these values are obtained from visual readings of the dry and wet bulb thermometers.

The monthly mean values of the relative humidity & vapour pressure are the arithmetic means of the corresponding mean daily values during the month. The lowest value of the relative humidity and its date of occurrence are obtained from the records of a hair hygrograph exposed in the screen, the height of the hair is 170 centimeters approximately above the ground.

The absolute maximum and minimum values of vapour pressure during the year are extracted from the values of the eight principal and secondary observations.

Evaporation measurements are taken once daily at 0600 U.T. from a Piche tube and also a class "A" evaporation pan and give the evaporation for the previous 24 hours. The Piche tube is installed in the screen with the dry and wet bulb, maximum and minimum thermometers ; the colour and effective area of the evaporation disc are as given in the notes on table A1. The class "A" evaporation pan is of the type recommended by the Commission of Instruments and Methods of Observation of the World Meteorological Organization Rec 42 (CIMO-56) ; it is of a cylindrical shape, 25.4 centimeters deep, 120.6 centimeters in diameter (inside dimentions). The pans, except at Bahtim, are freely exposed in the open air in the dry field, its rim at a height of 41 cms. above ground, far from obstacles such as buildings or trees. At Bahtim the pan is protected from animals and birds by a cylindrical cover of the same diameter as the pan and 30 cm height, made of metal wire mesh of one cm. side. Reduction of evaporation by 11%, established by systematic study is being allowed for in the data published.

The types of instruments used for measuring the amount of rainfall, their exposure and the evaluations of these amounts are given in the notes on table A 3.

TABLE C 4.—**Extreme Soil Temperature at Different Depths in Different Fields.**

The highest and lowest values of soil temperatures at the selected depths are extracted from their corresponding daily routine values.

The soil temperature readings are taken in the dry fields at the specified depths ranging from 2 cms to 300 cms as indicated in the table. These readings are taken regularly during the period from 0600 to 1800 U.T. according to the following schedule, except at Kharga where the observations are as appropriate but extend in the period between 1800 and 0600 U.T.

— at 0600 U.T. and every three hours for the 2,5 and 10 cms depths.

— at 0600 U.T. and every six hours for the 20 and 50 cms depths.

— at 1200 U.T. for the 100 and 200 cms. depths.

— at 0900 U.T. once every 3 days for the 300 cms depth.

The thermometers used are of the Fuess or the Fridrich type.

TABLE C 5.—Surface Wind

This table gives the following data :

— The annual mean of the day, the night-time and the day-time mean wind speeds.

— The annual number of days with surface wind speed at 10 metres reaching or exceeding specified limits for at least 5 minutes ; the highest gust recorded during the year and its date of occurrence.

The annual daily mean, the night-time mean and the day-time mean of the surface wind speed are the arithmetic means of monthly mean values. The monthly mean values of these elements are the arithmetic mean of the mean daily values. The mean wind speed of the day is computed for the period of 24 hours from 1800 U.T. of the previous day. The night-time mean wind speed is calculated from the total run of air during the period 1800 U.T. of the previous day to 0600 U.T. of that day. The day-time mean is similarly computed for the period 0600 U.T. to 1800 U.T. of the same day.

The type of the wind instrument used is of the run counter of the Lambrecht type, the cups of which are at 1½ metres above the ground.

The annual number of days with surface wind speed reaching or exceeding specified values of velocities (10, 15, 20, 25, 30, 35 & 40 Knots) for at least 5 minutes at any time between 2200 & 2200 U.T. irrespective of its direction are extracted from the daily routine analysis of the surface wind records during the whole year. The daily records of the Dine Pressure Tube Anemograph are used. The highest gust refers to the highest excursion made by the velocity pen on the records during the whole year. The head of the instrument is at a height of 10 metres above ground level.

LIST OF STATIONS APPEARING IN THE REPORT — SYNOPTIC AND CLIMATOLOGICAL STATIONS
YEAR 1971

District	Station	Index number Hiii	Latitude °N	Longitude °N	Elevation of the ground in metres (H or Ha)	Altitude of the station in metres (Hp)	Altitude of the barometer cistern in metres	Height of wind recording instruments (metres)		Synoptic observations								Hourly observations (H) Half hourly observ. (h) (0000-2400)	Upper air observations P (Pilot Balloon) W (Radio Wind) R (Radio Sonde)				Remarks
								Above building	Above ground	00	03	06	09	12	15	18	21		00	06	12	18	
Mediterranean	Sallum	62 300	31 33	25 11	4.0	6.0	5.2	10.0	14.0	×	×	×	×	×	×	×	×	H	P	—	P	—	
	Mersa Matruh (A)	306	31 20	27 13	30.7	30.0	30.0	10.0	17.5	×	×	×	×	×	×	×	×	H	RW	W	RW	W	
	Alexandria (A)	318	31 12	29 57	—3.35	6.78	6.45	10.0	22.08	×	×	×	×	×	×	×	×	H	P	—	P	—	
	Port Said (A)	333	31 17	32 14	1.1	6.1	2.7	—	—	×	×	×	×	×	×	×	×	H	P	—	P	—	
	El Arish	336	31 07	33 45	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	
	Ghazza	338	31 30	34 27	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	
Lower Egypt	Tanta	348	30 47	31 00	7.31	14.85	12.51	10.0	12.0	×	×	×	×	×	×	×	×	H	—	—	—	—	
Cairo Area	Cairo	366	30 08	31 24	111.54	74.5	64.72	—	10.0	×	×	×	×	×	×	×	×	h	—	—	—	—	
	Helwan	378	29 52	31 20	139.26	140.68	140.68	—	10.0	×	×	×	×	×	×	×	×	—	RW	W	RW	W	
Upper Egypt	Fayoum	381	29 18	30 51	23.43	—	—	10.0	13.8	—	—	×	×	×	×	×	—	H	—	—	—	—	
	Minya (A)	387	28 05	30 44	39.0	40.5	44.2	10.0	20.15	×	×	×	×	×	×	×	×	H	P	—	P	—	
	Assyout	393	27 11	31 06	71.08	69.6	69.6	15.0	20.0	×	×	×	×	×	×	×	×	H	—	—	—	—	
	Luxor (A)	405	25 40	32 42	95.0	88.45	88.45	10.0	21.0	×	×	×	×	×	×	×	×	H	P	—	P	—	
	Aswan (A)	414	23 58	32 47	200.0	193.5	198.96	10.0	15.0	×	×	×	×	×	×	×	×	H	RW	W	RW	W	
Western Desert	Siwa	417	29 12	25 29	—15.0	—13.26	—13.26	10.0	14.6	×	×	×	×	×	×	×	×	H	P	—	P	—	
	Bahariya	420	28 20	28 54	128.0	129.5	129.5	—	—	×	×	×	×	×	×	×	×	H	P	—	P	—	
	Farafra	423	27 03	27 58	90.0	92.1	92.1	—	—	—	—	×	×	×	×	×	—	H	—	—	P	—	
	Dakhla	432	25 29	29 00	106.21	111.27	107.75	10.0	14.7	×	×	×	×	×	×	×	×	H	P	—	P	—	
	Kharga	435	25 27	30 32	77.79	72.75	78.68	10.2	14.2	×	×	×	×	×	×	×	×	H	P	—	P	—	
Red Sea	Tor	459	28 14	33 37	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	
	Hurghada	462	27 17	33 46	1.0	2.75	2.75	10.0	15.0	×	×	×	×	×	×	×	×	H	—	—	P	—	
	Quseir	465	26 08	34 18	8.7	10.83	10.0	10.0	14.4	×	×	×	×	×	×	×	×	H	—	—	—	—	

GENERAL SUMMARY OF WEATHER CONDITIONS FOR THE YEAR 1971

WEATHER

The prevailing weather in Winter was alternatively cold and warm in January & February, but mostly cold in December. Spring was characterized by numerous and variant khamsin heat waves. In Summer weather was generally mild & humid in the northern parts, hot & rather humid in the middle parts, excessively hot & dry in the southern parts. In Autumn weather was generally mild intervened with few heat waves in September & October ; but mild to rather cold during November.

RAINFALL AND THUNDERSTORMS

Light to moderate rain fell over the northern parts in several days during Winter & the transitions and extended southwards in few days. Rain was heavy and associated with thunderstorms in few days over scattered localities in the north and reached records in several localities.

It is worthy to mention that the daily rainfall attained record values during January at Port Said (15.0 mm on the 8th), and at Hurghada (2.2 mm on the 10th) ; during March at Bahariya (2.7 mm on the 29th) and during April at Cairo (4.6 mm on the 3rd).

The monthly rainfall was generally above normal in January, April, November, December and mostly subnormal otherwise.

MISCELLANEOUS WEATHER PHENOMENA

The transits of depressions and Mediterranean troughs through the country were associated with scattered rising sand and few occasions of sandstorms. The annual frequency of occurrence of sandstorms was 33 days at Mersa Matruh, 21 days at Aswan ; otherwise it ranged between 1 and 10 days in general.

Weather was misty or foggy in the early morning over scattered localities ; the annual frequency was highest in Delta & Cairo, moderate in the Mediterranean and Middle Egypt and was negligible south of Minya area. The annual frequency of fog was 35 days at Alexandria, 19 days at Cairo ; and 1 to 12 days otherwise in general.

SURFACE WIND

Surface winds generally blew from N and NW directions and changed to SW mostly in the north of the country by the transitions of secondary depressions or Mediterranean troughs during Winter and transitions.

Winds were generally light to moderate and became fresh to strong in several days mainly during Winter and Spring. Calms were frequent in scattered localities during night & early morning intervals.

Gales were reported for few days in scattered localities from the Mediterranean, Lower Egypt and the Red Sea districts during Winter and Spring.

THE WEATHER DURING THE YEAR 1971

JANUARY

This month started with a pronounced warm spell which prevailed all over the Republic in the first week and was associated with a record for the highest maximum air temperature at Port Said (30.0°C) on the 3rd.

In the second week a moderate cold wave prevailed which was characterized with scattered heavy rain round the 9th yielding rainfall records at Port Said (15 mms) on the 8th and Hurghada (2.2 mm) on the 10th. During the second half of the month consecutive light cold and warm waves were experienced and scattered light rain was reported in the fourth week.

Early morning mist and fog developed in many days of the month over scattered localities in Delta, Canal & Cairo.

Light rising sand was reported in several days over few scattered localities.

The prevailing winds over the northern parts of the Republic were generally light to moderate W/NW, and backed to SWly in few days. Over the southern parts light to moderate N/NW winds prevailed.

Winds became fresh to strong during few days over scattered parts in Mediterranean and Red Sea districts.

FEBRUARY

The prevailing weather this month was rather cold and dry in general. Four moderate cold waves prevailed and were separated by warm periods. The second cold wave was the most excessive and prevailed during the second week.

Weather was light rainy in north of the country and the monthly rainfall was subnormal in general. Local heavy rain was reported on the 4th over few localities in the Mediterranean district.

Light rising sand was reported for few days over scattered places.

Ligth to moderate W/SW winds prevailed most of this month in north of the Country and changed to W/NW in few days. In the southern parts the prevailing winds were generally light to moderate N/NW. Winds became fresh to strong during several days in scattered places, mainly in the Mediterranean and Red Sea districts.

Gales were reported at Dabaa on the 12th, Abu Sueir and Fayed on the 21st, Hurghada on the 12th and 13th and Abul-Kizan on the 13th.

MARCH

The prevailing weather this month was changeable in temperature, characterized by five moderate khamsin heat waves round the periods (1st-3rd), (7th-10th), 16th, (23rd-24th) and (28th-29th). The break-down of the heat waves was followed by rather cold periods, the most pronounced of which was round the end of the second week.

Light rain was reported over scattered places in few days. It is worthy to mention that 2.7 mm of rain fell over Bahariya on the 29th, a record since the year 1931.

Weather was sandy over scattered places during several days, and in particular round the 13th, 18th and 30th when widespread rising sand and scattered sandstorms were experienced.

The prevailing winds during this month were generally light io moderate N/NW and backed to Wly by the transits of the Mediterranean troughs through the country. Winds became fresh to strong during several days in scattered places mainly in the Mediterranean, Red Sea, Western Desert and Upper Egypt districts.

Gales were reported at Sidi-Barani on the 15th, Banha, Fayed and Cairo on the 30th, Hurghada on the 18th.

APRIL

The prevailing weather was generally rather cold in the northern parts, mild in the middle and southern parts. Weather was characterized with two light khamsin heat waves round the 2nd and 11th and a pronounced heat wave which prevailed from the 26th till the end of the month.

Weather was rainy in several days over the northern parts where the monthly rainfall was above normal. The daily rainfall was heavy over scattered coastal localities on the 3rd and 12th, and attained record at Cairo (4.6 mm on the 3rd) since the year 1947.

Rising sand blew over scattered places on several days particularly on the 3rd, 11th and 12th when rising sand was widespread and associated with scattered sandstorms.

The prevailing winds during this month were generally light to moderate N/NW in general but changed in few days to Wly. Wind became fresh or strong during several days mainly in the period (10th-17th). Calms were frequent over scattered localities in late evening and early morning intervals.

Gales were reported at Sidi Barani and Mersa Matruh on the 3rd, Dabaa on the 3rd and 11th, Abu-Suer on the 11th, Aswan on the 15th and Hurghada on the 12th.

MAY

The prevailing weather during this month was changeable in temperature, intervened with four variant khamsin heat waves. The first wave was of long duration and prevailed most of the first third of the month, the other three heat waves were of short duration. The break-down of the heat waves was followed by mild weather. The month was generally hurmid in north of the Country and markedly dry in the south.

Precipitation during this month was confined to light rain over the Mediterranean district and few land localities round the 14th & 25th.

Rising sand was reported in few days over scattered places mainly in the eastern Desert & Upper Egypt districts.

Ligth to moderate N/NWly winds prevailed most of this month and backed to W/SW in few days, Winds were occasionally fresh over scattered localities during few days. Calms were frequent in early morning intervals over scattered land localities.

JUNE

The prevailing weather during this month was mostly mild & humid in the northern parts, rather hot in the middle parts and remarkably hot and dry in the southern parts. The month was intervened with three short heat waves round 6th, 8th, & 28th and a remarkable heat wave in the period (16th-20th).

Rising sand occurred during several days in scattered localities, mainly in the Mediterranean. Upper Egypt & Western Desert districts.

Light to moderate N/NW winds prevailed most of this month. Winds were fresh or strong during several days in scattered localities mainly in the Mediterranean, Red Sea & Western Desert districts . Calms were frequent most of night and early morning intervals in scattered places.

JULY

The prevaling weather this month was generally mild and humid in the northern parts, rather hot in the central parts and very hot and remarkably dry in the sauthern parts. The month was intervened with three short heat waves round the periods (1st-2nd), (7th-8th) & (20th-21st).

Early morning low clouds developed frequently over Delta and Cario areas with few occasions of mist or fog.

Light rising sand was reported in several days over few localities mainly in the Red Sea and Upper Egypt districts.

Light to moderate Nly and NWly winds prevailed most of this month. Winds freshened in several days over few scattered localities. Calm winds were frequent most of night and early morning in scattered places mainly inland.

AUGUST

The prevailing weather in this month was generally mild and humid in the northern parts, hot and moderately humid in the middle parts and excessively hot and remarkably dry in the southern parts.

Early morning mist developed in several days over scattered localities in Delta, Canal and Cairo areas.

Light rising sand was reported in few days over few scattered localities, maily in Upper Egypt & the Red Sea districts.

Light to moderate N/NW winds prevailed most of this month, and freshened during few days in few scattered localities. Calm winds were frequent most of nigth and early morning intervals in scattered localities.

SEPTEMBER

The prevailing weather in this month was generally mild and humid in the northern parts, rather hot and moderately humid in the middle parts and markedly hot and dry in the southern parts. The month was intervened with three variant heat waves round the periods (3rd-5th), 12th-13th) & (17th-20th). The first and third heat waves were pronounced in Upper Egypt district ; otherwise the waves were light.

The month was rainless apart from light rain over Mersa Matruh on the 25th.

Early morning low clouds developed frequently over Delta & Cairo areas with few occasions of mist.

Light rising dust was reported in several days in few localities mainly in Upper Egypt district.

Light to moderate N ly and NW ly winds prevailed most of this month. Winds freshened during few days in few scattered localities mainly in the Red Sea district. Calm winds were frequent during night and early morning intervals in many scattered localities.

OCTOBER

This month began with pronounced hot weather which prevailed in the northern and middle parts most of the first week, and in the southern parts most of the first three weeks. The break-down of this hot weather was associated with appreciable fall in temperature, and mild weather prevailed during the rest part of the month.

Rain was deficient and subnormal during this month and was confined to the Mediterranean district, where light rain was reported in the period (23rd-28th).

Light rising sand occurred for few days in few scattered localities, mainly in Upper Egypt and the Western Desert districts.

Light to moderate N ly and NW ly winds prevailed most days of the month. Winds freshened during several days in few scattered localities mainly in the Red Sea district. Calms were frequent in scattered localities during night and early morning intervals.

NOVEMBER

The prevailing weather this month was rather cold with subnormal temperatures in general. The month was intervened with two pronounced warm spells round the periods (12th-15th) and (26th-30th).

Weather was light rainy in general in north of the Country during the first and third weeks. Heavy rain assoicated with hail and thunderstorms were reported in the Mediterranean district on the 5th and 17th.

Scattered early morning mist developed during several days over Delta and Cairo areas.

The prevailing winds during this month were generally light to moderate N ly and NW ly. Winds became fresh or strong in few scattered localities, mainly in the Red Sea, Western Desert and Upper Egypt districts during the first week. Calms were frequent in general during night and early morning intervals in scattered localities.

DECEMBER

The prevailing weather in this month was remarkably cold and mainly during the second half of the month when temperatures were appreciaIy subnormal. The month was intervened with two mild spells in the first five days of the month and on the 11th.

Weather was abnormally rainy in the northern parts of the Country till Cairo area. The daily rain was heavy and associated with thundery activity on the 17th and 22nd.

Early morning mist and fog developed in several occasions over scattered places in Delta, Canal and Cairo areas.

Rising sand was reported in some days over few localities mainly in Upper Egypt.

The prevailing winds during this month were generally light to monderate NWly and changed to SW over the northern parts in few days. Winds were fresh/strong occasionally during several days in scattered localities mainly in the Mediterranean, Red Sea and Western Desert districts.

Gales were reported at Sidi Bàrani & M. Matruh on the 22nd, Ras El Hikma on the 10th.

Chairman (M. F. TAHA)
Board of Directors

Cairo, March 1973

SURFACE DATA

TABLE A 1.—ANNUAL VALUES OF THE ATMOSPHERIC PRESSURE, AIR TEMPERATURE, RELATIVE HUMIDITY, BRIGHT SUNSHINE DURATION & PICHE EVAPORATION

YEAR 1971

STATION	Atmospheric Pressure (mbs) M.S.L		Air Temperature °C									Relative Humidity %		Bright Sunshine Duration (Hours)			Piche Evaporation mms.
			Maximum		Minimum		$\frac{A+B}{2}$	Dry Bulb		Wet Bulb							
	Mean	D.F Normal or Average	(A) Mean	D.F Normal or Average	(B) Mean	D.F Normal or Average		Mean	D.F Normal or Average	Mean	D.F Normal or Average	Mean	D.F Normal or Average	Total Actual	Total Possible	%	Mean
Sollum	1014.4	—0.2	25.1	—0.2	15.6	0.0	20.4	19.9	—0.5	15.1	—0.8	57	— 3	—	—	—	8.9
Mersa Matruh (A)	1014.8	+0.1	24.2	—0.1	14.7	+0.3	19.4	19.2	—0.1	15.7	0.0	67	0	3382.8	4444.0	76	8.6
Alexandria . (A)	1014.5	+0.4	24.9	—0.1	15.3	—0.5	20.1	19.8	—0.5	16.2	—0.6	67	— 2	3402.1	4444.3	77	5.7
Port Said . . (A)	1012.9	—0.7	25.2	+0.6	16.6	—1.9	20.9	19.9	—1.2	16.7	—1.1	68	— 2	3475.3	4444.3	78	5.3
El Arish	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Ghazza.	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Tanta	1013.8	—0.1	26.4	—1.5	12.7	—0.3	19.6	19.1	—1.0	15.2	—0.6	64	+ 2	3426.5	4442.8	77	4.3
Cairo . . . .(A)	1014.1	+0.2	27.8	—0.3	15.5	0.0	21.6	21.2	—0.3	15.6	—0.4	53	— 1	—	—	—	13.1
Fayoum	—	—	29.3	—0.2	13.8	—0.8	21.6	21.2	—0.7	15.7	+0.1	54	+ 5	—	—	—	7.0
Minya . . .(A)	1013.1	—0.2	29.4	—0.4	13.2	0.0	21.3	21.1	—0.1	13.9	—1.1	47	— 3	3771.4	4438.3	85	10.8
Assyout . . .(A)	1011.8	—1.1	30.0	—0.4	14.9	—0.5	22.4	22.3	—0.7	14.2	—0.3	38	+ 1	—	—	—	15.1
Luxor . . .(A)	1010.8	—0.4	33.9	+0.5	15.3	—0.3	24.6	24.3	—0.2	15.4	—0.2	36	+ 1	—	—	—	10.2
Aswan . . .(A)	1011.1	+0.3	34.1	—0.1	17.8	+0.3	26.0	25.8	—0.3	14.3	+0.2	23	+ 3	—	—	—	21.5
Siwa.	1014.5	—0.1	29.6	—0.2	13.7	+0.6	21.6	21.5	—0.2	14.0	—0.1	42	+ 2	3604.9	4439.9	81	11.2
Bahariya	1013.9	+0.3	29.6	0.0	14.0	+0.4	21.8	21.7	—0.3	13.6	—0.8	37	— 3	—	—	—	11.4
Farafra	1016.7	+1.5	29.6	—0.5	13.2	—0.3	21.4	21.4	—0.6	13.4	+0.5	37	+ 5	—	—	—	14.2
Dakhla	1013.7	+1.1	31.0	—0.4	13.6	—1.1	22.3	22.4	—0.5	13.2	+0.1	30	+ 2	—	—	—	16.8
Kharga	1012.5	—0.3	32.2	0.0	16.1	+0.3	24.1	24.5	+0.5	13.7	—0.5	30	— 2	3952.8	4435.1	89	16.5
Tor	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Hurghada	1011.5	+0.4	28.1	+0.8	17.9	+0.2	23.0	23.2	0.0	16.7	—0.1	49	— 1	—	—	—	12.5
Quseir	1011.1	0.0	27.3	—1.1	20.4	—0.3	23.8	24.1	—0.4	17.8	0.0	50	+ 2	—	—	—	14.0

TABLE A 2.—MAXIMUM AND MINIMUM AIR TEMPERATURES

YEAR 1971

Station	Maximum Temperature °C									Grass Min. Temp.		Minimum Temperature °C							
	Highest	Date	Lowest	Date	No. of Days with Max-Temp.					Mean	Dev. From Normal	Highest	Date	Lowest	Date	No. of Days with Min. Temp.			
					>25	>30	>35	>40	>45							<10	<5	<0	<-5
Sallum	41.1	5/6	14.3	13/3	182	68	9	1	0	15.1	—	27.7	18/6	6.3	14/3	59	0	0	0
Mersa Matruh . . (A)	39.6	5/6	14.1	12/2	171	35	5	0	0	13.2	—	24.6	27/8	5.6	5/3	76	0	0	0
Alexandria . . . . (A)	36.8	23/5,10/6	13.8	22/12	186	48	2	0	0	13.8	—	24.9	15/8	4.8	1/3	77	1	0	0
Port Said . . . . (A)	35.6	20/5	11.6	22/12	193	71	1	0	0	16.2	—	24.2	7,21,24/8	6.3	14/3	26	0	0	0
El Arish	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Ghazza	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Tanta	38.4	6/10	11.7	22/12	217	122	11	0	0	—	—	22.3	14/8	3.4	15/2,7/3	131	12	0	0
Cairo . . . . . (A)	40.4	18/6	13.4	22/12	227	158	38	1	0	—	—	25.2	2/7	6.0	28/12	54	0	0	0
Fayoum	41.5	20/6	13.1	22/12	253	177	104	5	0	—	—	24.0	17/8	2.6	28/12	111	19	0	0
Minya . . . . . (A)	41.6	19/6	16.0	22/12	257	177	90	8	0	11.6	—	23.5	16/8	2.0	19/12	123	39	0	0
Assyout. . . . . (A)	43.6	18/6	15.3	23/12	270	194	107	16	0	12.6	—	25.0	2/7	3.5	29/12	85	6	0	0
Luxor . . . . . (A)	46.4	19/6	15.4	23/12	309	251	182	81	3	11.4	—	25.8	17/8	0.7	29/12	94	21	0	0
Aswan . . . . . (A)	46.4	30/5	17.4	28/12	313	252	187	109	5	—	—	28.1	10/7	3.2	29/12	55	2	0	0
Siwa	43.9	5/6	16.0	4/2	261	175	112	8	0	12.2	—	24.5	20/6	0.1	19/1	128	29	0	0
Bahariya	42.4	7/5	15.9	22/12	257	172	97	10	0	12.7	—	24.7	7/8	1.8	30,31/12	116	30	0	0
Farafra	43.8	29/5	16.2	17,22/12	259	181	114	13	0	12.8	—	26.0	14/5	— 0.7	29/12	127	50	2	0
Dakhla	45.8	7/6	16.0	28/12	285	214	131	25	1	13.5	—	29.4	21/6	— 1.0	29/12	130	44	1	0
Kharga	45.6	20/6	16.8	28/12	300	222	153	50	1	14.0	—	29.2	21/6	0.8	29/12	91	24	0	0
Tor	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Hurghada	37.6	16/8	16.8	28/12	258	159	17	0	0	—	—	27.7	9/7	5.9	14/2	40	0	0	0
Quseir	36.6	15/5	16.5	28/12	249	117	3	0	0	17.5	—	29.8	22/7	9.3	18/12	1	0	0	0

Table A 3. — SKY COVER AND RAINFALL

YEAR — 1971

Station	Mean Sky Cover (Oct).					Rainfall mms.										
	00 U.T.	06 U.T.	12 U.T.	18 U.T.	Daily Mean	Total Amount	D. From Normal	Max. Fall in one day		Number of Days with Amount of Rain						
								Amount	Date	<0.1	≥0.1	≥1.0	≥5.0	≥10	≥25	≥50
Sallum	2.6	2.3	2.9	2.4	2.6	28.9	—83.9	5.8	5/11	0	23	13	1	0	0	0
Mersa Matruh (A)	1.8	3.2	3.0	2.2	2.6	77.6	—65.9	14.6	22/12	9	40	17	4	2	0	0
Alexandria (A)	3.6	3.7	3.7	3.2	3.5	239.8	+46.9	29.7	8/1	8	54	37	10	8	1	0
Port Said (A)	1.8	2.6	2.0	1.6	2.0	105.6	+31.6	15.0	8/1	1	38	17	8	3	0	0
El Arish	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Ghazza	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Tanta	0.8	2.1	2.8	1.2	1.8	88.8	+41.9	19.0	9/1	1	26	14	5	3	0	0
Cairo (A)	1.1	2.4	2.4	1.4	1.8	32.3	+ 7.5	18.7	22/12	9	11	4	1	1	0	0
Fayoum	—	1.5	2.1	1.3	—	11.2	— 0.6	6.2	22/12	5	3	3	1	0	0	0
Minya (A)	0.6	1.2	1.7	1.0	1.3	7.2	+ 2.7	5.8	1/1	7	4	1	1	0	0	0
Assyout (A)	0.3	0.6	0.9	0.6	0.6	1.0	+ 0.7	1.0	12/4	7	1	1	0	0	0	0
Luxor (A)	0.4	0.8	0.8	0.6	0.6	Tr.	— 1.1	Tr.	10,11/1	2	0	0	0	0	0	0
Aswan (A)	0.2	0.8	0.9	0.6	0.7	Tr.	— 0.2	Tr.	10/1	1	0	0	0	0	0	0
Siwa	1.3	1.3	2.4	1.3	1.6	17.5	+ 8.1	13.6	2/4	2	5	2	1	1	0	0
Bahariya	0.6	1.3	1.7	1.0	1.1	10.3	+ 6.2	5.7	25/5	7	5	3	1	0	0	0
Farafra	—	0.8	1.3	0.8	—	0.9	— 0.9	0.5	22/12	1	4	0	0	0	0	0
Dakhla	0.3	0.3	0.5	0.2	0.3	0.0	— 0.5	0.0	—	0	0	0	0	0	0	0
Kharga	0.3	0.6	0.8	0.4	0.5	Tr.	— 1.1	Tr.	9/1,22/12	2	0	0	0	0	0	0
Tor	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Hurghada	0.7	1.1	1.3	1.0	1.1	4.1	+ 0.8	2.2	10/1	3	4	2	0	0	0	0
Quseir	0.4	0.8	0.9	0.7	0.8	Tr.	— 2.9	Tr.	10/1,3/4.26/5	3	0	0	0	0	0	0

Table A 4. — DAYS OF OCCURRENCE OF MISCELLANEOUS WEATHER PHENOMENA.

YEAR 1971

Station	Precipitation				Frost	Thunderstorm	Mist Vis ≥1000 metres	Fog Vis <1000 Metres	Haze Vis ≥1000 Metres	Thick Haze Vis <1000 Metres	Dust or Sandrising Vis ≥1000 Metres	Dust or Sandstorm Vis <1000 Metres	Gale	Clear Sky	Cloudy Sky
	Rain	Snow	Ice. Pellets	Hail											
Sallum	23	0	0	2	0	0	0	0	0	0	17	0	0	161	8
Mersa Matruh (A)	40	0	0	0	0	9	29	9	5	0	70	33	2	145	8
Alexandria (A)	54	0	0	0	0	11	23	35	15	0	10	5	0	98	28
Port Said (A)	38	0	0	0	0	5	3	0	3	0	14	1	0	220	9
El Arish	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Ghaza	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Tanta	26	0	0	0	0	2	68	13	10	0	10	0	0	229	5
Cairo (A)	11	0	0	0	0	0	95	19	100	6	52	12	1	227	3
Fayoum	3	0	0	0	0	0	10	0	5	0	9	1	0	—	—
Minya (A)	4	0	0	0	0	0	43	5	62	0	42	0	0	291	5
Assyout (A)	1	0	0	0	0	0	0	3	17	0	20	1	0	324	0
Luxor (A)	0	0	0	0	0	0	0	0	126	0	61	7	0	315	0
Aswan (A)	0	0	0	0	0	0	0	0	42	0	144	21	1	323	0
Siwa	5	0	0	0	0	0	0	0	0	0	45	0	0	236	5
Bahariya	5	0	0	0	0	0	0	1	4	0	24	1	0	282	2
Farafra	4	0	0	0	0	0	0	0	10	0	30	4	0	—	—
Dakhla	0	0	0	0	0	0	0	0	6	0	42	0	0	357	0
Kharga	0	0	0	0	0	1	0	0	1	0	62	1	0	325	1
Tor	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Hurghada	4	0	0	0	0	1	0	0	1	0	60	4	4	295	5
Quseir	0	0	0	0	0	0	0	0	0	0	10	0	0	317	0

Table A 5.—NUMBER IN HOURS OF OCCURRENCES OF CONCURRENT SURFACE WIND SPEED AND DIRECTION RECORDED WITHIN SPECIFIED RANGES

YEAR 1971

STATION	calm (hours)	Variable (hours)	Unrecorded (hours)	Wind speed in knots	Number in hours of occurrences of wind blowing from the ranges of directions indicated												
					345 / 014	015 / 044	045 / 074	075 / 104	105 / 134	135 / 164	165 / 194	195 / 224	225 / 254	255 / 284	285 / 314	315 / 344	All directions
Sallum	131	17	10	1–10	412	721	632	542	327	155	121	193	220	536	1046	1072	5977
				11–27	135	158	104	49	5	14	18	133	225	479	683	601	2604
				28–47	1	0	1	0	0	0	0	1	2	3	11	2	21
				≥48	0	0	0	0	0	0	0	0	0	0	0	0	0
				All speeds	548	879	737	591	332	169	139	327	447	1018	1740	1675	8602
Mersa Matruh . . (A)	115	2	0	1–10	497	250	113	187	255	270	180	256	451	618	416	602	4095
				11–27	503	162	132	202	180	152	168	279	475	312	527	1344	4436
				28–47	8	0	0	2	0	0	14	5	13	22	22	26	112
				≥48	0	0	0	0	0	0	0	0	0	0	0	0	0
				All speeds	1008	412	245	391	435	422	362	540	939	952	965	1972	8643
Alexandria . . . . (A)	47	1	19	1–10	797	438	266	238	317	315	387	465	200	299	923	1908	6553
				11–27	190	106	36	37	18	18	10	106	180	288	548	602	2139
				28–47	0	0	0	0	0	0	0	0	1	0	0	0	1
				≥48	0	0	0	0	0	0	0	0	0	0	0	0	0
				All speeds	987	544	302	275	335	333	397	571	381	587	1471	2510	8693
Port Said . . . . (A)	320	0	0	1–10	1429	684	464	491	160	84	102	205	482	977	800	1464	7342
				11–27	84	28	36	60	36	25	26	55	161	227	148	212	1098
				28–47	0	0	0	0	0	0	0	0	0	0	0	0	0
				≥48	0	0	0	0	0	0	0	0	0	0	0	0	0
				All speeds	1513	712	500	551	196	109	128	260	643	1204	948	1676	8440
Tanta	408	6	13	1–10	824	633	410	336	177	144	229	397	715	945	879	1103	6792
				11–27	199	95	60	69	21	13	25	26	163	222	283	364	1540
				28–47	0	0	0	1	0	0	0	0	0	0	0	0	1
				≥48	0	0	0	0	0	0	0	0	0	0	0	0	0
				All speeds	1023	728	470	406	198	157	254	423	878	1167	1162	1467	8333
Cairo . . . . . (A)	948	9	219	1–10	679	826	580	364	163	144	275	243	216	402	618	801	5311
				11–27	418	471	194	83	43	45	118	159	138	167	161	267	2264
				28–47	0	0	0	0	0	0	4	1	2	2	0	0	9
				≥48	0	0	0	0	0	0	0	0	0	0	0	0	0
				All speeds	1097	1297	774	447	206	189	397	403	356	571	779	1068	7584
Fayoum	59	48	24	1–10	2434	2370	257	116	101	185	263	381	431	297	465	713	8013
				11–27	149	253	10	0	0	1	13	29	31	68	20	41	615
				28–47	0	0	0	0	0	0	0	0	1	0	0	0	1
				≥48	0	0	0	0	0	0	0	0	0	0	0	0	0
				All speeds	2583	2623	267	116	101	186	276	410	463	365	485	754	8629
Minya . . . . . (A)	113	24	13	1–10	3241	595	59	49	42	252	382	170	131	193	301	860	6285
				11–27	1921	90	8	0	0	12	21	7	13	33	92	126	2323
				28–47	2	0	0	0	0	0	0	0	0	0	0	0	2
				≥48	0	0	0	0	0	0	0	0	0	0	0	0	0
				All speeds	5164	685	67	49	42	274	403	177	144	226	393	986	8610

Table A 5 (*contd.*)—NUMBER IN HOURS OF OCCURRENCES OF CONCURRENT SURFACE WIND SPEED AND DIRECTION RECORDED WITHIN SPECIFIED RANGES

YEAR 1971

Station	calm (hours)	variable (hours)	unrecorded (hours)	Wind speed in knots	Number in hours of occurrences of wind blowing from the ranges of direction indicated												All directions
					345 / 014	015 / 044	045 / 074	075 / 104	105 / 134	135 / 164	165 / 194	195 / 224	225 / 254	255 / 284	285 / 314	315 / 344	
Asyout . . . . . (A)	256	3	315	1–10	395	127	102	150	202	188	111	44	113	1376	1941	1276	6025
				11–27	410	43	6	1	31	57	28	18	19	107	408	1027	2155
				28–47	0	0	0	0	0	0	0	0	1	2	3	0	6
				≥48	0	0	0	0	0	0	0	0	0	0	0	0	0
				All speeds	**805**	**170**	**108**	**151**	**233**	**245**	**139**	**62**	**133**	**1485**	**2352**	**2303**	**8186**
Luxor . . . . . (A)	429	0	1	1–10	490	414	252	298	257	626	1183	433	594	1066	1381	875	7849
				11–27	19	35	18	0	3	7	12	10	32	107	188	50	481
				28–47	0	0	0	0	0	0	0	0	0	0	0	0	0
				≥48	0	0	0	0	0	0	0	0	0	0	0	0	0
				All speeds	**509**	**449**	**270**	**298**	**240**	**633**	**1195**	**443**	**626**	**1173**	**1569**	**925**	**8330**
Aswan . . . . . (A)	64	35	122	1–10	2180	734	114	79	92	70	97	62	72	200	324	1527	5551
				11–27	1106	277	26	29	11	5	12	4	8	92	318	1086	2974
				28–47	1	0	0	0	0	0	1	1	0	5	3	3	14
				≥48	0	0	0	0	0	0	0	0	0	0	0	0	0
				All speeds	**3287**	**1011**	**140**	**108**	**103**	**75**	**110**	**67**	**80**	**297**	**645**	**2616**	**8539**
Siwa	460	199	60	1–10	601	618	617	785	683	405	234	109	189	729	916	757	6643
				11–27	108	162	89	62	148	50	69	45	46	131	283	204	1397
				28–47	0	0	0	0	0	0	0	1	0	0	0	0	1
				≥48	0	0	0	0	0	0	0	0	0	0	0	0	0
				All speeds	**709**	**780**	**706**	**847**	**831**	**455**	**303**	**155**	**235**	**860**	**1199**	**961**	**8041**
Dakhla	221	86	9	1–10	613	370	267	314	282	227	435	398	613	1016	1478	1792	7805
				11–27	76	113	31	0	5	6	5	1	0	9	95	268	639
				28–47	0	0	0	0	0	0	0	0	0	0	0	0	0
				≥48	0	0	0	0	0	0	0	0	0	0	0	0	0
				All speeds	**689**	**513**	**298**	**314**	**287**	**233**	**440**	**399**	**613**	**1025**	**1573**	**2060**	**8444**
Kharga	61	96	39	1–10	2037	1003	232	113	96	102	110	76	95	209	527	1509	6109
				11–27	1641	268	1	1	0	0	7	2	6	20	92	417	2455
				28–47	0	0	0	0	0	0	0	0	0	0	0	0	0
				≥48	0	0	0	0	0	0	0	0	0	0	0	0	0
				All speeds	**3678**	**1271**	**233**	**114**	**96**	**102**	**117**	**78**	**101**	**229**	**619**	**1926**	**8564**
Hurghada	208	11	13	1–10	336	396	152	71	116	229	85	42	52	105	828	814	3226
				11–27	1959	389	2	2	66	56	12	0	1	43	744	1905	5179
				28–47	43	0	0	0	0	0	0	0	0	2	4	74	123
				≥48	0	0	0	0	0	0	0	0	0	0	0	0	0
				All speeds	**2338**	**785**	**154**	**73**	**182**	**285**	**97**	**42**	**53**	**150**	**1576**	**2793**	**8528**
Quseir	90	12	17	1–10	1433	1076	422	225	107	95	219	134	96	118	617	1366	5908
				11–27	802	1532	154	3	0	4	16	0	1	1	33	171	2717
				28–47	2	12	1	1	0	0	0	0	0	0	0	0	16
				≥48	0	0	0	0	0	0	0	0	0	0	0	0	0
				All speeds	**2237**	**2620**	**577**	**229**	**107**	**99**	**235**	**134**	**97**	**119**	**650**	**1531**	**8641**

UPPER AIR CLIMATOLOGICAL DATA

TABLE B 1.—ANNUAL MEANS, ABSOLUTE HIGHER AND LOWER VALUES OF ALTITUDE, AIR TEMPERATURE AND DEW POINT AT STANDARD AND SELECTED PRESSURE SURFACES.

YEAR 1971

Station	Pressure Surface (Millibar)	Altitude of Pressure Surface (gpm)						Temperature (°C)						Dew Point (°C)	
		N	Mean	Highest		Lowest		N	Mean	Highest		Lowest		N	Mean
				Value	Month	Value	Month			Value	Month	Value	Month		
Mersa Matruh 0000 U.T.	Surface	338	* 1014mb	* 1024m.b.	Dec.	* 1000mb	March	338	17.2	29.5	July	8.0	Jan.	338	12.4
	1000	336	144	231	Dec.	28	March	336	18.0	26.0	Oct.	9.0	Feb.	334	12.9
	850	337	1507	1597	Dec.	1415	Feb. & Apr.	337	12.4	25.0	May	— 2.5	March	333	— 0.4
	700	334	3129	3251	June	2959	Feb.	334	3.8	23.5	June	— 9.2	Dec.	331	—10.6
	600	331	4355	4532	June	4142	Feb.	331	— 3.9	8.1	May	—16.5	Feb.	328	—19.1
	500	324	5779	5985	June	5488	Feb.	324	—13.5	0.0	July	—26.8	Feb.	319	—28.0
	400	318	7442	7729	June	7065	Feb.	318	—25.4	—12.2	July	—39.0	Feb.	314	—38.6
	300	309	9496	9835	June	8985	Feb.	309	—39.6	—22.8	July	—51.3	March	300	—51.2
	250	300	10698	11108	June	10173	Feb.	299	—47.2	—35.0	July	—58.0	Jan.	287	—58.0
	200	286	12154	12608	June	11626	Feb.	286	—53.8	—44.7	June	—64.8	Jan.	224	—63.4
	150	269	13975	14448	Aug.	13474	Feb.	269	—61.0	—50.9	Jan.	—67.3	March	58	—68.6
	100	241	16451	16904	June	16026	Feb.	241	—67.6	—52.1	April	—78.7	June	3	—70.1
	70	200	18604	19011	Aug.	18220	Jan.	200	— 65.3	—54.3	March	— 77.7	Feb.	—	—
	60	164	19563	19990	Aug.	19200	Feb.	164	—62.8	—53.0	Sept.	—69.0	July	—	—
	50	162	20677	21097	Aug.	20341	Feb.	162	—60.7	—45.9	Jan.	—68.9	July	—	—
	40	120	22176	22500	July,Aug.	21720	Dec.	120	—58.0	—52.0	Aug.	—66.5	Jan.	—	—
	30	113	23917	24244	Aug,	23532	Dec.	113	—55.0	—45.0	June	—66.5	Jan.	—	—
	20	55	26490	26913	Aug.	26027	Dec.	55	—50.9	—41.0	Aug.	—62.1	Dec.	—	—
	10	2	31054	31197	June	30910	Dec.	2	—45.8	—45.6	Dec.	—45.9	June	—	—
Helwan 0000 U.T	Surface	352	* 997m.b.	* 1007m.b.	Jan.	* 984m.b.	April	352	17.7	30.2	May.	4.8	Dec.	352	10.0
	1000	352	116	237	Dec.	04	April	126	14.9	26.6	Oct.	4.8	Dec.	126	8.9
	850	351	1499	1569	Oct. & Dec.	1374	April	346	14.1	25.2	May	— 2.6	Dec.	346	— 0.1
	700	349	3109	3199	Oct.	2948	Feb.	346	4.7	15.5	July	— 8.9	Dec.	343	—11.0
	600	348	4349	4472	June	4133	Feb.	347	— 2.6	8.8	July	—16.2	Feb.	346	—17.9
	500	347	5771	5934	June	5487	Feb.	346	—12.3	1.4	July	—27.0	Jan. & Dec.	345	—26.6
	400	341	7440	7681	July	7055	Dec.	338	—24.0	—11.3	Aug.	—40.5	Dec.	337	—36.3
	300	330	9478	9821	July	8996	Feb.	328	—38.3	—26.9	July	— 50.0	Feb. & Dec.	327	—49.3
	250	319	10711	11104	July	10187	Feb.	318	—46.0	—33.7	July	—57.1	March	315	—56.1
	200	310	12176	12604	July	11645	Feb.	310	—53.5	— 44.3	April	—64.1	Jan.	279	—62.4
	150	297	13994	14444	Jaly	13509	Feb.	297	— 61.7	—52.3	April	—71.6	March	72	—66.6
	100	268	16453	16884	July	16019	Feb.	268	—69.1	—58.0	Dec.	—80.6	Aug.	—	—
	70	215	18604	18966	May	18189	Feb.	213	—66.9	—53.6	March	—77.5	Oct.	—	—
	60	173	19562	20190	June	19040	Jan.	172	—64.3	—58.5	Nov.	—75.6	June	—	—
	50	173	20652	21080	May	20298	Jan.	173	—61.7	—55.3	Aug.	—71.0	Feb.	—	—
	40	132	22140	22820	Aug.	21500	Feb.	132	—59.1	—51.3	May	—69.5	Jan.	—	—
	30	125	23863	24288	May	23408	Jan.	125	—56.0	—48.7	Aug. & Oct.	—70 3	Jan.	—	—
	20	73	26486	26947	Aug.	25868	Jan.	73	—50.7	—42.8	Aug.	—65.3	Jan.	—	—
	10	7	31242	31400	June	30988	Oct.	7	—43.1	—39.4	June	—48.1	Oct.	—	—
Aswan 0000 U.T.	Surface	346	* 993 m.b.	* 1001m.b.	Dec.	* 978m.b.	April	346	21.2	33.0	June	4.8	Dec.	346	2.6
	1000	345	89	201	Dec.	00	April	4	8.6	9.8	Dec.	8.0	Dec.	4	1.2
	850	345	1499	1564	Dec.	1408	April	344	19.1	30.7	June	0.8	Dec.	340	— 2.8
	700	333	3138	3221	Sept.	2990	April	331	8.8	18.7	March	— 5.4	Oct.	326	—11.4
	600	333	4393	4491	Sept.	4219	April	322	0.5	8.6	July	— 9.5	Jan.	318	—18.8
	500	317	5830	5946	Aug.	5634	Dec.	316	— 8.8	— 1.2	July	—18.9	Jan.	311	—27.4
	400	303	7526	7685	July	7266	Dec.	299	—20.0	—10.0	July	—29.5	Jan. & Dec.	295	—36.7
	300	292	9599	9835	July	9280	Dec.	290	—34.8	—24.0	June	—43.9	Feb.	285	—48.9
	250	287	10848	11124	July	10503	Dec.	287	—43.3	—31.6	June	—51.2	Nov.	277	—56.8
	200	283	12322	12633	June	11949	Dec.	278	—53.4	—41.8	June	—62.4	Nov.	260	—65.3
	150	261	14130	14518	June	13758	Dec.	257	—65.0	—56.4	April	—71.7	March	23	—70.1
	100	240	16545	16999	June	16206	Dec.	240	—74.3	—67.0	May	—83.5	Aug.	—	—
	70	160	18642	18953	Aug.	18329	Feb.	159	—70.4	—56.7	July	—81.0	Oct.	—	—
	60	109	19604	19990	Aug.	19320	Jan.	108	—59.9	—60.2	Jul. & Sep.	—75.7	July	—	—
	50	105	20688	20982	June	20368	Feb.	104	—62.9	—54.4	Feb.	—77.0	June	—	—
	40	74	22189	22440	July	21830	Jan.	74	—59.3	—50.4	Oct.	—69.8	July	—	—
	30	73	23917	24173	Oct.	23475	Jan.	73	—56.5	—48.7	Nov.	—70.3	Jan.	—	—
	20	54	26458	26826	Oct.	25905	Jan.	54	—50.4	— 43.1	Sept.	—64.0	Jan.	—	—
	10	4	31214	31297	July	31091	Feb.	4	—41.3	—38.6	Feb.	—43.6	June		

N = The number of casees the element has been observed during the year.

* The atmospheric pressure corrected to the elevation of the radiosonde station in millibars.

UPPER AIR CLIMATOLOGICAL DATA

TABLE B 1. (*Cont.*)—ANNUAL MEANS, ABSOLUTE HIGHER AND LOWER VALUES OF ALTITUDE, AIR TEMPERATURE AND DEW POINT AT STANDARD AND SELECTED PRESSURE SURFACES.

YEAR 1971

Station	Pressure Surface (Millibar)	Altitude of Pressure Surface (gpm)						Temperature (°C)						Dew Point (°C)	
		N	Mean	Highest		Lowest		N	Mean	Highest		Lowest		N	Mean
				Value	Month	Value	Month			Value	Month	Value	Month		
Meras Matruh 1200 U.T.			*	*		*									
	Surface	349	1014m.b.	1026m.b.	Dec	1002m.b.	March	349	22.6	36.5	June.	11.2	Dec.	349	13.7
	1000	349	144	230	Jan.,Dec.	45	March	349	21.3	36.2	June.	11.6	Feb.	349	12.1
	850	349	1529	1602	Nov.	1415	Apr.	349	12.5	26.2	June.	— 1.5	Feb.	347	— 0.4
	700	339	3135	3293	Juue.	2959	Feb.	339	3.9	23.8	June.	—10.0	Feb.	337	—11.3
	600	325	4369	4529	June.	4135	Feb.	325	— 4.0	8.2	June.	—17.4	Feb.	320	—17.7
	500	325	5809	6019	June.	5478	Feb.	225	—13.4	0.4	June.	—27.9	Dec.	221	—27.5
	400	320	7447	7762	June,	7048	Feb.	319	—24.9	—10.2	July.	—40.0	Feb.	312	—37.9
	300	309	9480	9883	Juue.	8962	Feb.	309	—39.1	—25.7	July.	—51.2	Jan.	303	—50.3
	250	297	10709	11165	June.	10152	Feb.	296	—46.3	—39.9	Dec.	—59.5	Mar.	286	—57.1
	200	288	12153	12678	Juue.	11605	Feb.	285	— 53.5	— 44.5	June.	— 65.4	Jan.	225	—62.9
	150	255	13994	14518	June.	13477	Feb.	253	—60.6	— 48.9	Apr.	— 67.6	Dec.	93	—68.2
	100	214	16498	16973	June.	16057	Feb.	214	— 67.0	—55.9	Mwy.	—78.1	March	5	—68.6
	070	178	18649	19060	July.	18266	Feb.	178	—64.2	—54.1	March.	—75.0	July.	—	—
	060	151	19655	20070	Aug.	19240	Dec.	151	— 61.6	—52.8	Jnue.	—67.5	Jan.	—	—
	050	150	20772	21176	Aug.	20424	Dec.	150	—59.0	—50.8	Oct.	—67.9	Dec·	—	—
	040	100	22249	22670	June.	21600	Dec.	100	—56.3	—51.2	Aug.	—62.8	Jan.	—	—
	030	92	24014	24496	Aug.	23633	Dec.	92	—52.2	—46.0	Nov.	—63.8	Jna.	—	—
	020	50	26688	27155	July	26354	Dec.	50	—47.2	—38.5	July	—57.0	Aug.	—	—
	010	1	31428	—	—	—	—	1	—43.0	—	—	—	—	—	—
Helwan 1200 U.T.			*	*		*									
	Surface	353	997mb	1009mb	Dec.	980mb	Apr.	353	26.4	38.2	Aug.	9.4	Dec.	353	8.4
	1000	351	111	213	Dec.	9	Apr,	103	22.4	29.4	Nov.	13.0	Dec.	103	7.4
	850	351	1510	1575	Dec.	1373	Apr.	350	14.2	27.1	May	— 0.8	Feb.	350	— 1.3
	700	349	3124	3211	June.	2960	Apr,	345	5.7	17.0	June.	— 9.2	Feb.	343	—14.0
	600	343	4369	4553	Auy.	4140	Feb.	343	— 2.0	9.1	Sept.	—18.0	Jan.	341	—20.2
	500	340	5802	5981	June.	5480	Feb.	340	—11.2	3.0	July	—27.4	Dec.	340	—28.5
	400	336	7469	7733	July	7055	Feb.	336	—22.9	— 9.3	Aug.	—37.1	May	336	—38.5
	300	322	9517	9886	July	9043	Feb.	322	—37.2	— 24.1	June.	—48.9	Feb.	320	—50.8
	250	310	10756	11151	June.	10247	Feb.	310	—45.0	—32.0	June.	—57.0	Apr	310	—57.5
	200	297	12225	12673	June.	11699	Feb.	296	—52.4	—43.7	July	—65.7	Jan.	264	—63.7
	150	278	14055	14534	Aug.	13545	Feb.	276	—60.4	—52.7	June.	—68.5	Nov.	91	—68.4
	100	249	16532	17004	June.	16078	Feb.	249	—68.3	—58.3	Dec.	—78.0	July	1	—70.4
	070	213	18682	19087	June.	18273	Feb.	213	—65.6	—57.1	Dec.	—74.5	June.	—	—
	060	175	19652	20070	July	19210	Oct.	175	—62.4	—46.9	Oct.	—69.0	March	—	—
	050	174	20753	21151	July	20354	Feq.	174	—59.3	—52.8	July	—66.9	June.	—	—
	040	142	22262	22730	June.	21840	Feb. & Dec.	142	—56.1	—50.9	Sept,	—63.6	Jan.	—	—
	030	135	24015	24888	July	23532	Jan.	135	—52.7	—46.1	July	—63.2	Jan.	—	—
	020	93	26664	27196	July	26162	Jan.	93	—47.2	—39.3	July	—58.0	Jan.	—	—
	010	4	30550	31879	Aug.	29327	Nov.	4	—37.0	—33.0	Aug.	—39.2	Nov.	—	—
Aswan 1200 U.T.			*	*		*									
	Surface	335	988 m.b.	1000m.b.	Dec.	978 m.b.	4,6	335	32.6	46.0	May	15.0	Jan.	335	3.9
	1000	239	81	193	Dec.	01	May	—	—	—	—	—	—	—	—
	850	332	1509	1580	Oct·	1442	Feb.	332	19.8	32.2	May	2.3	Dec.	332	— 5.2
	700	314	3150	3240	Oct.	3019	Feb.	314	9.3	17.4	Aug.	— 7.0	Dec.	313	—14.7
	600	299	4413	4512	Oct.	4216	Dec.	299	1.1	8.7	July	—12.2	Dec.	297	—21.2
	500	294	5852	5983	May	5581	Dec.	292	— 1.6	1.8	Aug.	—23.0	Dec.	281	—29.0
	400	282	7549	7716	Aug.	7249	Dec.	280	—19.2	—10.0	Aug.	—33.0	April	276	—38.8
	300	269	9630	9866	Aug.	9309	Dec.	267	—34.1	— 26.1	June.	—43.3	April	261	—50.7
	250	253	10882	11157	Aug.	10549	Dec.	251	—43.0	—31.0	May.	—51.8	Jan.	243	—58.4
	200	245	12370	12670	Aug.	12011	Feb.	242	—52.6	—47.0	June.	—67.2	Dec.	217	—65.8
	150	225	14180	14512	Aug.	13831	Feb.	223	—63.0	— 54.0	May.	— 69.5	Dec.	19	—72.1
	100	196	16610	16934	Aug.	16237	Feb.	192	—73.2	—57.5	Apr.	—82.1	July	—	—
	070	151	18716	19048	Aug.	18344	Feb.	149	—69.2	—61.3	Apr.	—79.0	July	—	—
	060	97	19681	20060	Aug.	19100	Jan.	95	—64·7	—58.0	May.	—71.4	March	—	—
	050	97	20775	21155	Aug.	20448	Dec.	96	— 60.4	—48.2	Oct.	—66.0	Jan.	—	—
	040	62	22308	22680	Aug.	22010	Dec.	62	—57.1	—49.9	July	—66.1	Dec.	—	—
	030	61	24160	24489	Aug.	23741	Dec.	60	—50.7	—41.7	July	—57.8	Dec.	—	—
	020	44	26671	27229	Aug.	26380	Dec.	44	—45.1	—36.0	Aug.	—53.3	Dec.	—	—
	010	1	31324	—	—	—	—	1	—38.1	—	—	—	—	—	—

N = The number of cases the element has been observed during the year.

* The atmospheric pressure corrected to the elevation of the radiosonde stations.

TABLE B 2.—MEAN AND EXTREME VALUES OF THE FREEZING LEVEL AND THE TROPOPAUSE ; THE HIGHEST WIND SPEED IN THE UPPER AIR

YEAR 1971

	Station	Freezing Level									First Tropopause									Highest wind speed			
		Maen			Highest			Lowest			Mean			Highest			Lowest						
		Altitude (gpm)	Pressure (mb.)	Dew point (°C)	Altitude (gpm)	Pressure (mb.)	Dew point (°C)	Altitude (gpm)	Pressure (mb.)	Dew point (°C)	Altitude (gpm)	Pressure (mb.)	Temperature (°C)	Altitude (gpm.)	Pressure (mp.)	Temperature (°C)	Altitued (gpm.)	Pressure (mb.)	Temperature (°C)	Altitude (gpm.)	Pressure (mb.)	Direction (000—360)°	Speed in knots
0000 U.T.		(N)	(N)	(N)							(N)	(N)	(N)										
	Mersa Matruh	3662 (332)	661 (332)	—13.5 (329)	5899 (July)	500	—29.0	1240 (Mar.)	880	— 3.0	13423 (249)	177 (249)	—63.5 (249)	18000 (July)	82	—78.5	7460 (Apr.)	383	—40.9	10882	239	255	163 (Mar.)
	Helwan. . .	3833 (348)	649 (348)	—13.8 (346)	6120 (July)	489	—22.7	1170 (Dec.)	880	— 4.9	14086 (243)	159 (243)	—65.8 (243)	18490 (June)	75	—79.6	6930 (Nov.)	418	—29.7	11600	218	245	176 (Jan.)
	Aswan . . .	4432 (324)	599 (324)	—19.0 (319)	6220 (July)	480	—26.9	1600 (Dec.)	840	— 5.7	15777 (154)	118 (154)	—72.9 (144)	18380 (June)	76	—78.6	10000 (Mar.)	281	—47.7	12184	202	252	190 (Jan.)
1200 U.T.		(N)	(N)	(N)							(N)		(N)										
	Mersa Matruh	3634 (336)	659 (336)	—14.1 (334)	6050 (July)	497	—10.5	1250 (Feb.)	874	— 2.7	13303 (244)	180 (234)	—62.0 (234)	18100 (Oct)	76	—64.5	7080 (Feb.)	409	—35.2	10434	249	260	190 (Feb.)
	Helwan. . .	4021 (339)	633 (339)	—17.3 (339)	6340 (July)	475	—20.8	1350 (Feb.)	860	— 9.2	13898 (239)	162 (239)	—64.0 (139)	21050 (Jan.)	46	—64 7	7320 (Dec.)	392	—37.3	9530	294	270	160 (Jan.)
	Aswan . . .	4574 (296)	588 (296)	—22.3 (206)	6260 (July)	480	—33.3	1710 (Dec.)	827	— 3.7	15584 (142)	122 (112)	—71.4 (142)	18200 (Aug.)	79	—75.5	10400 (May.)	267	—47.5	10700	249	260	155 (Dec

(N) = The number of casas the element has been observed during the year.

TABLE B 3.—NUMBER OF OCCURRENCES OF WIND DIRECTION WITHIN SPECIFIED RANGES AND THE MEAN SCALAR WIND SPEED AT THE STANDARD AND SELECTED PRESSURE SURFACES

MERSA MATRUH (A)—YEAR 1971

Time	Pressure Surface (Millibar)	Wind between ranges of direction (000—360°)																								Number of Calm winds	Total number of observations (TN)	Mean scalar wind speed (knots)
		345 / 014		015 / 044		045 / 074		075 / 104		105 / 134		135 / 164		165 / 194		195 / 224		225 / 254		255 / 284		285 / 314		315 / 344				
		N	(ff) m	N	(ff) m	N	(ff) m	N	(ff) m	N	(ff) m	N	(ff) m	N	(ff) m	N	(ff) m	N	(ff) m	N	(ff) m	N	(ff) m	N	(ff) m			
0000 U.T.	Surface	16	11	10	8	2	9	5	9	23	9	17	10	25	8	33	7	59	8	44	9	40	11	39	13	20	338	9
	1000	27	15	14	11	5	10	7	13	19	14	24	12	12	14	7	15	26	13	46	14	51	6	49	17	6	293	14
	850	39	17	24	17	21	20	7	11	6	8	5	8	11	15	23	15	21	18	25	17	42	21	71	18	3	298	17
	700	32	23	22	18	10	16	3	18	2	16	1	15	3	11	18	21	30	26	50	22	58	22	51	21	0	280	22
	600	31	22	13	18	5	16	1	16	0	—	1	26	5	24	12	25	38	30	62	26	71	28	32	24	0	271	27
	500	19	28	11	20	0	—	3	22	1	7	0	—	1	10	9	31	41	28	80	35	71	31	28	30	1	265	33
	400	13	35	9	18	2	24	1	55	0	—	0	—	0	—	11	45	56	42	70	44	72	38	21	38	0	255	42
	300	7	43	2	28	0	—	1	57	0	—	0	—	0	—	12	38	56	58	91	61	53	49	17	50	0	239	56
	250	4	55	1	11	1	63	1	85	0	—	0	—	0	—	14	30	48	69	80	65	55	54	11	49	0	215	62
	200	1	37	1	6	2	34	0	—	1	73	1	5	1	8	10	55	43	66	73	66	39	59	7	59	0	179	66
	150	1	19	1	16	0	—	0	—	0	—	1	16	4	16	12	50	29	52	46	51	22	52	2	28	0	118	52
	100	1	5	1	28	0	—	0	—	2	10	7	24	5	20	11	30	21	37	34	34	5	35	1	40	0	88	34
	70	0	—	1	3	2	30	8	16	8	26	5	15	3	7	4	10	7	14	5	26	3	40	1	40	1	48	25
	60	0	—	1	19	3	17	7	16	6	16	4	21	0	—	0	—	3	20	5	19	4	23	0	—	1	34	18
	50	0	—	0	—	2	20	10	23	5	26	1	36	1	10	0	—	0	—	3	21	1	16	0	—	0	23	22
	40	0	—	0	—	2	27	6	24	5	27	1	21	0	—	0	—	0	—	1	15	3	19	0	—	0	18	22
	30	0	—	0	—	1	31	6	28	4	32	0	—	0	—	0	—	0	—	1	35	0	—	0	—	0	12	32
	20	0	—	0	—	0	—	1	40	0	—	0	—	0	—	0	—	0	—	0	—	0	—	0	—	0	1	40
	10	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
1200 U.T.	Surface	47	12	22	9	15	13	14	14	7	10	9	15	8	14	11	16	14	16	15	23	71	17	115	13	1	349	14
	1000	54	16	24	11	12	12	14	12	14	17	11	13	11	16	11	14	16	18	22	21	63	21	90	17	0	342	17
	850	44	14	21	16	9	14	6	10	6	7	8	18	11	16	29	16	38	15	48	17	64	18	56	16	1	341	16
	700	25	18	21	17	8	21	2	19	3	8	1	6	13	17	17	26	46	20	62	22	83	21	47	23	0	328	22
	600	24	23	15	17	4	19	3	4	1	6	1	34	5	26	20	26	46	25	84	29	82	25	39	22	0	324	26
	500	12	22	12	16	2	18	0	—	0	—	1	34	6	52	15	40	58	39	105	35	68	32	33	26	0	312	34
	400	9	30	6	17	0	—	1	2	0	—	2	26	2	49	18	47	63	44	114	47	60	40	26	37	0	301	43
	300	8	33	2	22	1	24	0	—	0	—	0	—	2	34	18	46	60	54	104	60	67	54	16	50	0	278	57
	250	2	36	0	—	1	20	0	—	0	—	1	3	1	46	13	61	57	66	95	71	51	65	15	68	0	236	66
	200	1	87	1	12	0	—	0	—	3	12	0	—	2	48	13	56	39	64	79	67	37	64	11	46	0	186	66
	150	0	—	0	—	0	—	0	—	0	—	3	10	5	22	16	33	36	50	58	56	28	55	3	27	0	149	56
	100	3	20	0	—	0	—	1	11	1	22	10	22	17	19	14	23	19	30	32	34	8	39	2	18	0	107	35
	70	0	—	1	20	3	8	5	18	15	21	19	17	7	16	6	9	3	20	5	20	4	17	0	—	0	68	17
	60	1	18	1	21	4	22	5	11	19	14	14	18	2	22	2	18	1	9	1	10	1	10	0	—	0	51	16
	50	0	—	0	—	7	18	10	16	10	23	9	22	3	23	0	—	1	20	3	18	0	—	0	—	0	43	18
	40	0	—	1	3	4	22	9	21	7	19	3	27	1	30	1	10	2	17	0	—	1	10	0	—	0	29	17
	30	0	—	0	—	3	19	8	21	5	24	0	—	1	18	0	—	1	20	1	17	0	—	0	—	0	19	20
	20	0	—	0	—	1	21	2	34	0	—	0	—	0	—	0	—	0	—	0	—	1	20	0	—	0	4	27
	10	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—

N = The number of cases the wind has been observed from the range of direction during the year.

TN = The total number of cases the wind has been obeserved for all directions during the year.

TABLE B 3 (*contd.*)—NUMBER OF OCCURRENCES OF WIND DIRECTION WITHIN SPECIFIED RANGES AND THE MEAN SCALAR WIND SPEED AT THE STANDARD AND SELECTED PRESSURE SURFACES.

HELWAN—YEAR 1971

Time	Pressure Surface (Millibar)	Wind between ranges of direction (000—360°)																						Number of Calm winds	Total number of observations (TN)	Mean scalar wind speed (knots)
		345 / 014		015 / 044		045 / 074		075 / 104		105 / 134		135 / 164		165 / 194		195 / 224		225 / 254		255 / 284		285 / 314		315 / 344				
		N	(ff) m	N	(ff) m	N	(ff) m	N	(ff) m	N	(ff) m	N	(ff) m	N	(ff) m	N	(ff) m	N	(ff) m	N	(ff) m	N	(ff) m	N	(ff) m			
0000 U.T.	Surface	64	7	103	9	25	10	24	8	15	7	8	9	3	6	7	5	5	5	12	6	6	6	48	6	32	352	8
	1000	26	10	42	11	9	8	11	8	5	10	1	14	2	2	3	4	2	6	1	7	3	8	15	7	7	127	8
	850	46	12	37	11	8	12	7	9	4	12	9	15	13	14	22	14	32	15	54	13	55	14	60	14	1	348	14
	700	33	14	11	14	8	15	0	—	1	5	4	20	16	16	25	19	48	21	79	19	55	19	51	19	2	344	19
	600	24	16	9	14	2	6	4	8	3	14	5	14	13	11	25	18	65	27	92	26	59	24	33	18	4	338	24
	500	13	14	7	7	3	17	1	2	2	6	3	9	10	12	31	23	72	32	98	32	59	31	21	25	0	320	29
	400	8	24	7	16	3	14	1	36	0	—	3	4	1	17	32	27	80	36	93	40	46	37	23	26	1	298	36
	300	4	21	4	10	0	—	1	85	2	15	1	11	4	19	33	25	79	55	77	46	51	40	12	27	0	268	46
	250	4	15	1	9	0	—	1	5	0	—	4	20	12	32	24	28	73	38	65	48	48	52	9	37	0	241	50
	200	3	23	0	—	0	—	0	—	2	12	1	21	12	25	32	29	59	36	62	43	34	52	12	29	0	217	43
	150	0	—	1	16	1	12	0	—	2	22	7	20	15	30	28	26	42	37	46	51	24	53	3	19	0	169	44
	100	3	24	1	22	1	5	3	19	7	16	7	20	12	18	13	21	27	34	28	49	9	47	1	37	0	112	38
	70	1	8	1	3	3	20	17	18	4	14	2	18	7	12	4	30	9	28	9	49	3	60	0	—	0	60	31
	60	1	20	1	26	5	18	15	22	5	20	2	17	4	12	3	18	3	49	6	39	3	53	1	76	0	49	30
	50	1	4	2	12	8	19	11	20	3	21	3	12	5	13	0	—	4	44	5	30	4	44	0	—	0	46	26
	40	1	20	4	19	6	33	10	23	1	8	1	10	1	21	2	12	0	—	4	28	1	42	1	9	0	32	24
	30	1	29	0	—	2	25	11	26	1	7	1	28	3	15	1	24	1	23	1	114	0	—	0	—	0	22	28
	20	0	—	0	—	0	—	6	23	2	24	0	—	0	—	0	—	0	—	0	—	0	—	1	14	1	10	19
	10	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
1200 U.T.	Surface	63	10	42	11	1	9	0	—	9	7	8	8	5	15	26	60	23	9	43	9	34	9	88	9	11	353	9
	1000	27	9	20	13	3	11	1	1	1	2	3	8	2	2	6	5	10	11	12	8	10	9	16	9	3	114	9
	850	57	10	39	11	18	10	6	14	3	8	11	7	6	14	33	14	25	16	52	13	45	11	51	11	1	347	12
	700	21	15	10	13	7	11	5	14	4	12	9	13	17	11	45	17	51	22	65	22	58	14	45	23	1	338	19
	600	12	15	8	10	4	6	4	24	0	—	4	25	19	16	29	21	73	25	86	27	48	21	41	25	2	330	23
	500	7	22	5	8	5	7	2	34	3	6	4	8	5	16	33	22	74	32	92	30	56	24	29	28	1	316	30
	400	6	15	5	30	1	10	1	3	1	70	1	10	3	6	39	21	76	39	86	38	53	49	19	33	0	291	37
	300	6	13	0	—	0	—	2	16	0	—	2	4	3	11	29	27	66	39	80	42	53	53	9	45	0	250	43
	250	3	24	1	50	1	8	0	—	4	9	2	14	6	22	24	25	66	44	76	44	46	59	7	29	0	236	46
	200	2	60	0	—	1	8	0	—	1	5	2	22	7	16	27	32	53	40	72	50	43	59	6	45	0	214	49
	150	0	—	0	—	0	—	1	10	3	20	7	22	9	25	26	24	40	41	61	46	25	59	6	68	1	179	47
	100	2	7	0	—	0	—	6	18	7	14	9	17	14	18	23	25	25	33	26	38	14	42	4	34	0	130	35
	70	2	8	1	11	4	26	17	20	11	20	8	22	7	22	6	22	8	32	14	31	4	32	0	—	0	82	27
	60	0	—	2	17	4	14	17	18	16	22	4	10	2	16	5	23	3	9	10	21	4	32	1	24	0	68	21
	50	0	—	2	6	5	16	23	22	14	19	4	13	1	22	1	16	3	20	5	32	1	37	0	—	0	59	22
	40	0	—	0	—	8	26	15	24	10	21	8	21	0	—	2	16	4	18	2	44	1	13	0	—	0	50	24
	30	0	—	0	—	5	11	12	24	9	26	2	14	0	—	3	8	3	40	2	26	0	—	1	28	0	37	25
	20	0	—	3	20	5	25	2	38	0	—	0	—	1	15	0	—	2	38	2	11	0	—	1	9	0	16	24
	10	0	—	0	—	0	—	2	50	0	—	0	—	0	—	0	—	0	—	0	—	0	—	0	—	0	2	50

N = The number of cases the wind has been observed from the range of direction during the year.

TN = The total number of cases the wind has been obeserved for all directions during the year.

TABLE B 3 (*contd.*)—NUMBER OF OCCURRENCES OF WIND DIRECTION WITHIN SPECIFIED RANGES AND THE MEAN SCALAR WIND SPEED AT THE STANDARD AND SELECTED PRESSURE SURFACES.
ASWAN (A)—YEAR 1971

Time	Pressure Surface (Millibar)	Wind between ranges of direction (000—360°)																						Number of Calm winds	Total number of observations (TN)	Mean scalar wind speed (knots)
		345 / 014		015 / 044		045 / 074		075 / 104		105 / 134		135 / 164		165 / 194		195 / 224		225 / 254		255 / 284		285 / 314		315 / 344				
		N	(ff) m	N	(ff) m	N	(ff) m	N	(ff) m	N	(ff) m	N	(ff) m	N	(ff) m	N	(ff) m	N	(ff) m	N	(ff) m	N	(ff) m	N	(ff) m			
0000 U.T.	Surface	165	10	45	12	8	6	13	10	8	8	0	—	2	8	0	—	2	4	2	8	28	13	67	11	5	345	10
	1000	4	10	0	—	0	—	0	—	0	—	0	—	0	—	0	—	0	—	0	—	0	—	0	—	0	4	10
	850	57	13	57	14	38	12	18	11	15	11	6	11	4	12	9	10	13	8	19	9	44	12	51	16	0	331	13
	700	15	18	13	12	10	9	11	14	13	10	10	10	19	11	19	12	42	15	75	18	46	15	34	14	0	307	15
	600	5	14	7	13	2	15	4	14	6	8	0	—	10	13	24	15	36	22	77	23	47	30	19	19	0	237	20
	500	5	18	3	13	4	23	3	13	2	6	1	11	5	9	13	22	30	30	69	33	44	27	13	19	0	192	26
	400	1	23	4	20	3	29	1	11	2	12	0	—	1	20	5	16	26	45	67	50	40	45	11	35	0	161	35
	300	2	48	0	—	0	—	0	—	0	—	1	20	0	—	3	40	24	61	61	62	41	54	11	31	0	143	60
	250	2	34	0	—	0	—	0	—	0	—	0	—	0	—	1	9	21	72	63	73	35	75	12	55	0	134	72
	200	1	42	0	—	0	—	0	—	0	—	0	—	0	—	0	—	23	81	65	82	31	71	5	68	0	125	22
	150	0	—	0	—	0	—	0	—	0	—	0	—	0	—	1	42	18	69	54	63	27	58	1	61	0	101	60
	100	0	—	0	—	0	—	0	—	0	—	0	—	0	—	1	19	13	28	32	36	9	46	2	23	0	57	36
	70	0	—	1	18	3	10	1	5	4	9	0	—	2	12	3	17	3	11	8	38	4	27	1	14	0	30	20
	60	1	10	1	21	0	—	2	8	4	15	1	7	3	10	0	—	2	12	3	19	4	21	0	—	0	21	14
	50	0	—	0	—	2	16	4	12	2	12	1	5	0	—	0	—	0	—	1	18	4	20	1	8	0	15	14
	40	1	10	1	10	3	11	5	9	1	10	0	—	0	—	0	—	0	—	1	20	2	26	0	—	0	14	14
	30	1	12	1	13	0	—	2	12	1	9	1	9	0	—	0	—	1	2	0	—	1	15	0	—	0	8	14
	20	0	—	2	15	0	—	6	—	0	—	0	—	0	—	0	—	0	—	0	—	0	—	0	—	0	2	15
	10	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	0	—	—
1200 U.T.	Surface	135	11	47	9	6	10	11	6	4	8	6	6	3	7	7	9	7	8	14	9	29	10	56	11	10	335	10
	1000	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
	850	53	13	23	10	34	11	26	11	12	10	7	6	10	8	3	6	18	9	27	10	53	11	65	14	0	331	11
	700	16	9	11	9	8	10	12	13	2	6	10	11	11	10	26	16	60	18	63	17	56	17	34	17	0	309	17
	600	11	11	7	10	5	16	5	13	3	6	8	7	19	18	29	19	58	25	77	22	45	32	29	16	0	296	21
	500	11	17	5	11	7	16	7	17	2	14	6	10	16	12	33	21	50	24	87	30	47	25	18	20	0	289	26
	400	9	18	4	15	14	10	16	8	8	7	8	7	11	12	9	12	44	34	94	36	48	35	12	25	0	277	33
	300	4	16	4	18	4	8	13	14	17	12	10	10	7	12	18	19	40	42	74	50	52	46	11	43	0	254	44
	250	4	13	5	8	4	12	11	15	23	13	13	18	3	14	16	24	36	40	70	54	40	48	9	50	0	234	48
	200	0	—	3	10	3	11	10	19	23	21	16	16	7	12	20	21	31	58	58	86	37	56	7	61	0	215	52
	150	2	14	2	14	1	6	15	18	25	25	13	25	7	22	14	24	22	27	54	54	25	62	0	—	0	180	46
	100	0	—	1	10	1	17	16	36	28	34	9	29	6	20	8	20	20	30	22	36	15	34	1	8	0	127	32
	70	0	—	0	—	3	12	24	24	20	29	5	9	2	33	0	—	3	25	8	21	5	17	4	16	0	74	27
	60	2	15	0	—	1	22	22	24	20	27	6	13	0	—	2	24	0	—	3	15	3	18	1	25	0	60	20
	50	0	—	1	12	6	19	26	30	12	26	0	—	1	5	0	—	0	—	1	10	1	11	0	—	1	49	20
	40	0	—	0	—	2	16	26	23	10	32	1	20	1	4	0	—	0	—	1	6	0	—	0	—	0	41	21
	30	1	6	0	—	1	6	25	30	9	17	0	—	0	—	0	—	0	—	0	—	0	—	0	—	0	36	28
	20	0	—	0	—	1	44	11	30	2	—	0	—	0	—	1	5	0	—	0	—	0	—	0	—	0	15	30
	10	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—

N = The number of cases the windhas beenobserved from the range of direction during the year.

TN = The total number of cases the wind has been obeserved for all directions during the year.

Review of Agro-meteorological Stations

MERSA MATRUH - YEAR 1971

For the year as a whole the mean daily air temperature and relative humidity were nearly the same as last year. The total annual rainfall was 77.6 mm. against 64.6 mm. for last year.

Comparing the mean values of agrometeorological elements in the months of the year with the corresponding values of the year 1970, we find the following :

The mean daily air temperature was higher than last year in May, June & December ; lower in February & March ; and about the value of last year in the other months of the year.

The mean daily relative humidity was higher than last year in May, August, October & December ; and about the value of the preceding year otherwise.

The total monthly rainfall was higher than last year in February, April & December ; lower than last year in January, September, October & Novermber ; and about the value of last year otherwise.

The mean daily actual sunshine duration was higher than the preceding year in May ; lower in February, April & December ; and about the value of the preceding year otherwise.

The mean daily wind speed at 1.5 m. height was higher than last year in February, April, June & December ; lower than last year in March, May, August & October ; and about the value of last year otherwise.

The extreme maximum soil temperatures at depths between 2 & 100 cm. were mostly higher than the corresponding values of last year in June, October & December ; generally lower than last year in February, March, May, July August, September & November ; and the departures were irregular in January & April.

The extreme minimum soil temperatures at depths between 2 & 100 cm. were generally higher than the corresponding values of last year in May, June, July & December ; generally lower than last year in March, April, August, September, October & November ; and the departures were irregular in January, February.

TAHRIR — YEAR 1971

For the year as a whole the mean daily air temperature was slightly below average, while the mean daily relative humidity was slightly above average. The total annual rainfall was 55.2 mm. against 36.0 mm. for average.

The characteristic features of the year can be summarized in the following extreme mean value of elements acquired in the months of the year since the year 1961 :

January : The highest mean relative humidity, the lowest mean pan evaporation.

February : the lowest mean relative humidity

April : the lowest mean of day and mean maximum air temperature, the highest monthly rainfall, the lowest mean pan evaporation.

June : the lowest mean minimum air temperature.

July : the lowest mean minimum air temperature, the lowest mean pan evaporation.

October : the lowest mean minimum air temperature, the lowest mean pan evaporation.

November : the lowest mean of day and mean minimum air temperature, the lowest mean pan evaporation.

December : the lowest mean maximum air temperature, the highest mean relative humidity, the lowest mean actual sunshine duration.

Comparing the mean values of agrometeorological elements in the months of the year with the corresponding average values we find the following :

The mean daily air temperature was above average in January & May ; below average in April June, July, October, November & December ; and about average in February, March, August & & September.

The mean daily relative humidity was above average in January, November & December ; and showed insignificant departures from average in the rest months of the year.

The total monthly rainfall was appreciably above average in January & December ; above average in April ; below average in February, March, October & November ; and about average otherwise.

The mean daily actual sunshine duration was above average in February, September & October ; below average in April & December ; and about average in the other months of the year.

The mean daily pan evaporation was about average in February & March ; and below average in the rest of the year.

The mean daily wind speed at 1.5 m. height was above average in February, April & December ; and below average in the other months of the year. The departures from average were generally slight and varied between 0.1 and 0.7 m./sec.

The extreme maximum soil temperatures at depths between 2 & 100 cm. were mostly higher than the corresponding values of the year 1970 in June, September, October & December ; lower in January to May inclusive and in November ; and the departures were irregular in July & August.

The extreme minimum soil temperatures at depths between 2 & 100 cm. were mostly higher than the corresponding values of the year 1970 in May, June, July, August, October, November and December ; generally lower in January, February, March & September ; and the departures were irregular in April.

BAHTIM — YEAR 1971

For the year as a whole the mean daily air temperature and relative humidity were about average. The total annual rainfall was 36.1 mm. against 33.7 mm. for average.

The characteristic features of the year can be summarized in the following extreme mean values of elements acquired in the months of the year since the year 1967.

February : the highest mean minimum air temperature, the lowest mean relative humidity.

April : the lowest mean daily and mean maximum air temperatures, the highest monthly rainfall.

May : the highest mean actual sunshine duration.

June : the lowest mean pan evaporation, the lowest mean wind speed.

September : the lowest mean maximum air temperature.

October : the lowest mean daily and mean maximum air temperatures.

November : the lowest mean daily, mean maximum and mean minimum air temperatures, the lowest mean relative humidity, the lowest mean pan evaporation and the lowest mean wind speed.

December : the highest mean minimum air temperature, the highest monthly rainfall and the lowest mean actual sunshine duration.

Comparing the mean values of elements in the months of the year with the corresponding average values we find the following :

The mean daily air temperature was above average in January and May, below average in April, June, July, October and November ; and about average otherwise.

The mean daily relative humidity was above average in January and December ; below average in February and about average in other months of the year.

The total monthly rainfall was above average in April and December ; below average in March, May and November ; and about average otherwise.

The mean daily actual sunshine duration was above average in May ; below average in April and December ; and about average otherwise.

The mean daily pan evaporation was above average in February ; below average in January, June and December ; and about average in the rest of the year.

The mean daily wind speed at 1.5 m. height was below average in January ; and about average otherwise.

The extreme maximum soil temperature at depths between 2 and 100 cm. were generally higher than last year in December ; generally lower than last year in January to May inclusive and in November ; and the departures were irregular in June to October inclusive.

The extreme minimum soil temperatures at depths between 2 and 100 cm. were generally higher than last year in June ; generally lower than last year in January to April inclusive, July, August, October, November and December ; and the departures were irregular in May and September.

KHARGA — YEAR 1971

For the year as a whole the mean daily air temperature and relative humidity were ra the average. The year was rainless apart from trace in January and December, against 0.8 mm. for average annual rainfall.

The characteristic features of the year can be summarized in the following extreme mean values of elements acquired in the months of the year since the year 1964 :

January : the highest mean of day, mean maximum and mean minimum air temperature, the highest mean pan evaporation.

March : the highest mean pan evaporation .

April : the highest mean actual sunshine duration.

May : the highest mean of day and mean maximum air temperature, the lowest mean relative humidity.

June : the lowest mean actual sunshine duration .

August : the lowest mean pan evaporation.

November : the lowest mean minimum air temperature, the lowest mean actual sunshine duration and the lowest mean pan evaporation.

December : the highest mean relative humidity.

Comparing the mean values of agrometeorological elements in the months of the year with the corresponding average values we find the following :

The mean daily air temperature was above average in January, March, May ; below average in February, April, June, July, October, November ; and about average in August, September & December.

The mean daily relative humidity was above average in December ; and about average in the rest of the year.

The mean daily actual sunshine duration was above average in April ; below average in June & November ; and about average otherwise.

The mean daily pan evaporation was above average in January & March ; below average in February and from May to September inclusive ; and about average in the other months of the year.

The mean daily wind speed at 1.5 m. height was below average by 0.7 m./sec. in August ; otherwise it was about average with slight departures between 0.1 and 0.4 m./sec.

The extreme maximum soil temperatures at depths between 2 & 100 cm. were generally higher than the corresponding values of the year 1970 in January, June, September, October & December ; generally lower in February, March, April, May & November ; and the departures were irregular in July & August.

The extreme minimum soil temperatures at depths between 2 & 100 cm. were generally higher than the corresponding values of the year 1970 in January, April, May & June ; generally lower in February, March, August to December inclusive ; and the departures were irregular in July.

TABLE C 1.—AIR TEMPERATURE AT 1½ METRES ABOVE GROUND

YEAR — 1971

STATION	Air Temperature (°C)					Mean Duration in hours of daily air temperature above the following values										
	Mean Max.	Mean Min.	Mean of the day	Night time mean	Day time mean	—5°C	0°C	5°C	10°C	15°C	20°C	25°C	30°C	35°C	40°C	45°C
Mersa Matruh. .	24.2	14.7	19.2	17.2	20.9	24.0	24.0	24.0	23.1	18.0	10.9	3.9	0.2	0.03	0.0	0.0
Tahrir	28.0	13.0	19.9	16.6	22.6	24.0	24.0	24.0	21.9	17.4	11.5	5.6	2.2	0.2	0.0	0.0
Bahtim	27.4	11.9	19.3	15.5	22.3	24·0	24.0	23.8	21.5	16.5	10.6	5.4	2.1	0.2	0.0	0.0
Kharga	32.2	16.1	24.5	21.2	27.3	24.0	24.0	23.9	22.6	20.2	16.5	11.8	6.6	3.0	0.5	0.0

TABLE C 2.—EXTREME VALUES OF AIR TEMPERATURE AT 1½ METRES ABOVE GROUND, ABSOLUTE MINIMUM AIR TEMPERATURE AT 5cms ABOVE GROUND OVER DIFFERENT FIELDS

YEAR 1971

STATION	Max. Temp. at 1½ metres (°C)				Min. Temp. at 1½ metres (°C)				Min. Temp. at 5 cms. above (°C)			
	Highest		Lowest		Highest		Lowest		Dry soil		Grass	
	Value	Date	Value	Date	Value	Date	Value	Date	Value	Date	Value	Date
Mersa Matruh. . . .	39.6	5/6	14.1	12/2	24.6	27/8	5.6	5/3	2.0	20/3	—	—
Tahrir	39.4	20/6	12.2	22/12	23.4	14/8	3.2	1/3	1.2	1/3	—	—
Bahtim	39.4	7/5	12.4	22/12	21.0	18/7&16/8	1.0	19/1	— 1.7	19/1	—	—
Kharga	45.6	20/6	16.8	28/12	29.2	21/6	0.8	29/12	— 1.4	29/12	—	—

TABLE C 3.—(SOLAR + SKY) RADIATION, DURATION OF BRIGHT SUNSHINE, RELATIVE HUMIDITY, VAPOUR PRESSURE AT 1½ METRES, EVAPORATION & RAINFALL

YEAR 1971

STATION	(Soar+Sky) Radiation gm. cal/cm²	Duration of Bright Sunshine (hours)			Relative Humidity %				Vapour pressure (mms)						Evaporation(mms)		Rainfall (mms)		
		Total Actual monthly	Total Possible monthly	%	Mean of day	1200 U.T.	Lowest	Date	Mean of day	1200 UT	Highest	Date	Lowest	Date	Piche	Pan class A	Total Amount Monthly	Max. Fall in one day	Date
Mersa Matruh	×	3382.8	4444.0	76	71	58	6	2/3	12.2	12.6	25.6	26/8	1.3	2/3	7.6	×	77.6	14.6	22/12
Tahrir . . .	494.3	3509.1	4441.6	79	69	44	9	16/3	11.8	11.4	21.3	15/8	2.9	1,16/3	6.4	6.72	55.2	21.4	9/1
Bahtim . . .	496.5	3438.9	4440.9	77	65	41	9	16/3	10.8	10.4	21.1	15/8	2.3	16,17/3	7.2	7.00	36.1	9.9	3/4
Kharga . . .	476.8	3952.8	4435.1	89	32	22	5	29/5 18/6	6.8	7.1	15.5	10/9	1.5	11/8	16.3	14.12	Tr.	Tr.	9/1 22/12

TABLE C 4.—EXTREME SOIL TEMPERATURE AT DIFFERENT DEPTHS (CMS) IN DIFFERENT FIELDS

YEAR 1971

Station	Highest (H) Lowest (L)	Extreme soil temperature (°C) at different depths (cms.) in dry field.								Extreme soil temperature (°C) at different depths (cms.) in grass field.							
		2	5	10	20	50	100	200	300	2	5	10	20	50	100	200	300
M. Matruh. . .	H	42.7	39.3	34.8	31.0	29.4	26.8	25.3	—	—	—	—	—	—	—	—	—
	Date	19/6	19/6	18/8	20/8	31/8	29,31/8 8,9/9	29,30/9	—	—	—	—	—	—	—	—	—
	L	6.9	7.7	9.9	11.4	14.0	16.1	19.0	—	—	—	—	—	—	—	—	—
	Date	19/1	19/1	25/1	11/2	23.12	22/12	21/2	—	—	—	—	—	—	—	—	—
Tahrir.	H	54.6	49.3	42.8	37.3	33.7	31.7	29.7	28.5	—	—	—	—	—	—	—	—
	Date	20/6	15/8	16/8	16/8	17/8	20,21& 23/8	4/9	15,18/4 & 24/9	—	—	—	—	—	—	—	—
	L	7.1	7.6	8.2	9.7	13.6	16.4	18.7	20.1	—	—	—	—	—	—	—	—
	Date	17,24/12	24/12	24/12	28/12	28/12	29,30/1 & 1/2*	20,21 & 22/2*	28/2	—	—	—	—	—	—	—	—
Bahtim	H	55.7	46.6	41.0	35.1	32.5	30.7	28.4	26.9	—	—	—	—	—	—	—	—
	Date	20/7	20/7	17/8	16/8	18,19 & 20/8	31/8 & 10,11/9*	30/9 & 6,7/10*	28/10 & 4,8/11*	—	—	—	—	—	—	—	—
	L	4.2	5.4	9.5	15.1	18.2	19.7	22.1	22.9	—	—	—	—	—	—	—	—
	Date	28/12	28/12	28/12	28,29/12	16/2	19,20 & 21/2*	28,29& 30/3*	12,15/4	—	—	—	—	—	—	—	—
Kharga	H	59.2	51.2	43.7	38.0	35.6	33.6	31.4	30.3	—	—	—	—	—	—	—	—
	Date	9/6	9/6	9/6	16,17,22/8	17,19,23/8	3,5/8	27,30/9 & 1/10*	3,4 & 5/10	—	—	—	—	—	—	—	—
	L	2.5	5.9	10.3	15.2	19.9	22.7	25.0	26.6	—	—	—	—	—	—	—	—
	Date	29/12	29/12	29/12	29/12	29/12	17,18,19/2	7,10,11/3	31/3,30/4 & 2/5*	—	—	—	—	—	—	—	—

* More than three dates.

TABLE C 5.—SURFACE WIND

YEAR 1971

STATION	Wind Speed m/sec at 1½ metres			Days with surface wind speed at 10 metres							Max. Gust (konts) (10 metres)	
	Mean of the day	Night time mean	Day time mean	≥ 10 (knots)	≥ 15 (knots)	≥ 20 (knots)	≥ 25 (knots)	≥ 30 (knots)	≥ 35 (knots)	≥ 40 (knots)	Value (knots)	Date
M. Matruh .	4.4	3.5	5.4	365	328	193	100	51	18	8	61	3/4
Tahrir . . .	2.1	1.4	2.8	341	194	52	23	10	3	0	47	9/1
Bahtim. . .	2.1	1.3	3.0	308	132	37	17	2	1	0	49	12/4
Kharga . .	3.6	2.8	4.5	335	236	116	23	4	0	0	39	13/2

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